

### Radiography a Very Important Factor in Dental Progress.

By WILLIAM A. GIFFEN, D.D.S., Detroit Mich.

Mediocre ability developed and well trained will produce greater efficiency than will extraordinary ability scattered or uncared for. It is what we do with what we have, as much as what we have that counts in dentistry. Efficiency in our case, whether we possess great or little ability consists of making the best of what we have, of doing our best with it, of reaching the highest within the range of our capability. We can do no more, we should do no less.

Average efficiency in results of dental operations is much lower than it should be, because so many dentists are satisfied with average results. are is no department in dentistry where this low average has been

There is no department in dentistry where this low average has been demonstrated so thoroughly, as in root canal treatment, by the excellent work of Drs. M. L. Rhein, D. M. Graham, R. Ottolengui and other radiographers. In fact, the more progressive members of the dental profession have acepted the evidence to date that the rational use of the X-ray as an aid to the early diagnosis of dental lesions, is invaluable to the humanitarian dentist, and those members who do not realize the value of the radiograph in their practices are not properly protecting their professional reputations, and are apt to be embarrassed when treating conditions that do not respond readily by having the patient say. "Doctor, don't you think it would be a good thing to have a radiograph

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made to find out what the conditions are regarding this case?" Even if they have not consulted other dentists there is always some friend among the laity who is liable to give the patient this advice.

Interpretation Important.

A correct interpretation of radiographs is the most important point in this work, but like cavity preparation or any other dental work, there is but one way of becoming an expert and that is by prac-

tical experience, and the beginning is bound to make mistakes. However, like spoiling an inlay those mistakes should not discourage the dentist, but spur him on to more accurate effort.

Dr. Johnson's Editorial. It seems to the writer that it is a great pity, at a time when the profession is making such heroic efforts to improve the technic of root canal work, that a man of the reputation and influence of Dr.

C. N. Johnson should see fit to write an editorial throwing so much discredit on dental radiography as that which was published in the April number of the *Dental Review*, and which was so charitably criticised by Dr. R. Ottolengui in the June number of the ITEMS OF INTEREST. It is to be hoped that every dentist who read Dr. Johnson's editorial will read Dr. Ottolengui's comments on the same.

In arriving at a diagnosis of a dental lesion with the aid of the X-ray, the dentist should always get all details of the clinical history of the case, and know the angle from which the ray was directed; otherwise the diagnostician may occasionally be misled and disappointed.

In making dental examinations, it is astonishing to find so many devitalized teeth which have incipient or blind abscesses due in many cases to inefficient treatment. Many of these teeth may never have been sore, nor have caused trouble in any way, even when there has been considerable resorption of osseous tissue in the region of the apices; undoubtedly due to toxic irritation. However, when the opsonic index of those persons becomes subnormal and physiological resistance of the tissues becomes lowered those cases will undoubtedly cause trouble.

It has been estimated that twenty-five per cent. of the people have infected areas around the ends of the roots of some of their teeth. These septic foci either complicate or produce a great variety of infectious conditions which, undoubtedly, shorten many human lives, and it is our duty to correct these conditions when we find them, as there can be no excuse for leaving any focus of infection anywhere in the mouth provided we know where it is. As a result of the X-ray of the profession will be spurred on to do far better work, and the percentage of pathologic lesions will be much decreased. Dentists in the future must



take advantage of the Roentgen ray to examine abutments for crowns and bridges, and it will enable them to use only those which can be put in condition to withstand the stress of mastication, with the result that the percentage of chronic lame teeth under crowns and bridges will be much decreased.

It will enable the dentist to make an early diagnosis of pathologic conditions which already exist, and which he may be called upon to relieve, with the result that the period of suffering by the patient will be lessened from years, months, and weeks to days, hours and minutes.

The radiographic examination of root fillings would be made much more simple and accurate, especially in those cases where clinical symptoms and history are absent, if some investigator would devise a root filling which would meet the requirements demanded by the profession, and in which would be incorporated a sufficient amount of a neutral material impervious to the ray. One could then prove absolutely whether the apical third of a root canal were filled with the filling material or with hot air.

Protection. It is a fact that fifteen operators have sacrificed their lives in this country alone and many operators and patients have been maimed and disfigured by the X-ray. Thus, every dentist who decides to take up this work in the future, should fully protect himself and his patient from the dangerous effects of long or repeated exposure to the rays.

### Creatment of Pyorrhea Alveolaris.

By A. C. STRICKLAND, D.D.S., Houston, Texas.

I have been very much interested in the articles under the heading of "Correspondence" on "The Surgical Treatment of Pyorrhea," in recent numbers of ITEMS OF INTEREST, by Drs. Heckert, Stewart, Simon, Morton, Burns and Norton. For the last several years I have treated certain cases of this disease along these same lines, splitting the gum tissue to the bottom of the pyorrhea pocket, removing all deposits and cauterizing the parts well with nitrate of silver and later polishing the exposed surface of the roots thoroughly. This treatment has worked well in some cases of single-rooted teeth and in cases where the pyorrhea pocket was on the labial or buccal surface of the roots, but in cases of multi-rooted teeth and where the pyorrhea pocket was on the lingual or palatal aspect of the root, this method has not proven so successful with me; nor does this class of treatment raise the immunity of the system

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nor eradicate the disease from the blood and, while we may produce a cure of the diseased tooth by this treatment, it is almost certain to recur in a very short while by attacking some of the other teeth in the mouth and often in a part remote from that first attack.

In treating pyorrhea we have many things to consider. There are several varieties of this disease, and to treat it successfully and intelligently we must be able to correctly diagnosticate the variety we have under consideration for treatment and to find the etiology of this particular case. This would often require an analysis of the urine and a laboratory test for the bacteriological findings. The patient's diet also must be considered and, if found at fault, should be corrected. Thorough instrumentation, prophylaxis and a constitutional treatment to raise the general tone of the system and the intelligent use of autogenous bacterial vaccines to immunize the parts and ward off further attacks will be found the most sane and successful treatment for pyorrhea, so far as our knowledge of the etiological factor of this diseased condition is what it is and has been proven up to the present time.

## Formaldehyde, a Cure for Pyorrhea Alveolaris.

By G. A. BARNETT, D.D.S., Joplin, Md.

After two years of experimenting I have found that a solution of formaldehyde will positively cure pyorrhea in its worst form. You will get almost instant relief where pain is intense, pus will stop flowing within a few days, gums will settle down around necks of teeth, and if the alveolar plate is not entirely destroyed teeth will soon tighten so that if there are any missing teeth they can be replaced with bridgework in a surprisingly short time.

Unlike Dr. Friedman I will give my chosen profession the benefit of my experience in the treatment of the tubercular condition of the alveoli.

I will report on only one case at this time, though I could give dozens of others but I consider this particular case as bad as any could be.

Case No. 11, J. S. W., age about 50, came to me one year ago after having been treated for pyorrhea for a number of years. The six lower anterior teeth were barred together with a cast plate; his gums were greatly inflamed and there was an excessive exudation of purulent matter from the pockets, and the patient had not slept for two nights.

I removed what calcareous deposit there was around the necks of



the teeth and prescribed ten drops of formaldehyde to half a glass of water, and ordered that if he did not get a slight burning sensation around necks of teeth and under the tongue to keep adding formaldehyde until he did. He was obliged to use from twenty to twenty-five drops to half a glass of water to get the slight burning sensation which is imperative.

I see this case every sixty days for prophylactic treatment. There are no signs of pus, gums are hard and teeth are tight. Do not let the "wise ones" think they can put up a preparation of disguised formaldehyde and sell it as a "cure of pyorrhea." It is necessary to have each individual test out the amount that his or her gums will endure to get the burning effect.

I usually start them with eight or ten drops to half glass of water and instruct patient to add to or deduct as necessary. I have one patient who can only use six drops.

A little later I will give what I have found to be the principal cause of pyorrhea.



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## President's Hadress. American Society of Orthodontists.

By Guy G. Hume, D.D.S., Toronto, Canada.

Mr. Vice-President and Members of The American Society of Orthodontists:

As this is the first time the American society has held its meeting outside the borders of the United States we, as Canadians, wish to express to the members of the society our appreciation of the honor done us in holding the meeting this year in Toronto, and we trust the members will enjoy their stay while in the city. Personally, I wish to thank the members for electing me to the office of president.

It is not my purpose to burden you with a lengthy address, but simply to call your attention to one or two features relating to our association. First of which is the time of holding our annual meeting. The time should, I think, be changed on account of the danger of encountering intense heat during the month of July. We should not be subjected to the inconvenience of traveling under such conditions, nor do I think we should be influenced by other associations in choosing our dates of meeting. For the last two years the dates of our meeting have been selected and subsequently changed on account of conflicting with dates of other societies. As they changed their dates this year, we had to change ours to conform to the resolution passed at our last meeting, thus necessitating our meeting on the United States national holiday, July 4th. Some members wished to have the dates again changed this year, but a vote of the Executive Committee decided that we should ad-



here to our resolution passed at the last annual meeting. We are an independent organization and we should meet irrespective of other societies. Our object is to work and get the most out of our association with one another. This meeting should not be just the beginning of a holiday. In future when the place of meeting is chosen, I think the time most suitable for that locality should be decided.

As to our membership, we find that the society is in a very healthy condition. Although three members handed in their resignations last year, we find a goodly number making application for membership. The fact that our constitution now calls for a more rigid examination of new members, eliminates any possibility of individuals being elected to whom any objection could be taken. We do not aim at numerical strength, but each member should endeavor to bring into the society individuals who would be eligible for membership. This society always extends an invitation and grants the full privileges of its meetings to any and all who are interested in the study of our particular specialty.

Our society is to be congratulated on having such an excellent program as has been prepared for us—one of the features is the large number of "Cases To Be Reported." We trust those taking part in this section of the program have kept in mind the suggestion as to "failures." We all want to hear of the other fellow's failures. If we recognize wherein we fail we will probably learn more than from our successes. The best results of a meeting, however, must depend on the combined individual efforts of all the members to take part in the discussions of the papers presented and not leave it just to a few.

Few of us are endowed with the faculty of Research Work. carrying on such work as has been done by Dr. Dewey—but such work must be recognized as being of the highest scientific order, and is greatly to be commended. We trust that Dr. Dewey will give us some report of the progress that he has made since last year, and enlighten us on any further information he has gained regarding "The Opening of the Intermaxillary Suture."

In reviewing the recent progress in our work—possibly the mechanical application of force stands foremost. The valuable paper given to us last year by Dr. J. Lowe Young, and the most exacting technique as demonstrated at that time by him, has probably interested more of the members of our society than any other phase of our work during the last year. This subject will no doubt receive its merited attention in its place on the program of this meeting.

A report which will be made at this meeting on "Terminology" should be thoroughly discussed by all. Different terminology is being used at the pres-

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ent time by various members of our society, and it is most desirable that all should conform to the use of the same terms, so that there will not be misunderstanding and confusion. In different scientific bodies we have from time to time suggestions as to the use of terms other than those which have probably been in vogue for some time, because the new terms are more expressive or more scientific. the work of the Committee on Nomenclature of the Institute of Dental Teachers, we find no terms relating to our particular subject have been mentioned, so that when the committee which was appointed at the last meeting makes its report, the members of the society should give every consideration to the suggestions made therein. It is only by acceptance of new terms by societies such as ours that a change in terminology will be adopted by the profession. Individuals cannot do And in anticipation of the report to be made to this society, I would suggest that we co-operate with the Committee on Nomenclature of the Institute of Dental Teachers, and if new terms are adopted by this society, that we ask the Institute of Dental Teachers to add such terms in their Glossary. If we could arrange with the teachers in the different colleges to use new terms we adopt, there could be no better way for the furthering of our aims. This leads me further to say that this society should take some active interest in the education and training of those who study the subject in which we are most interested. In the majority of dental colleges this subject is not given sufficient time. I contend that all students in dentistry should have as thorough a course as possible. The demand for services is ever increasing and at the present time there is only one place of which I know that is giving a post-graduate course. I believe if our society would act the authorities of the schools could be made to realize that more time should be given to this subject in our dental colleges. This matter is of vital importance. I venture to suggest that our society go into the matter of dealing with post-graduate work so that graduates may have an opportunity to further their studies and be given the very best instruction. If it were possible, some place should be chosen where a continuous clinic could be carried on as it is most desirable that those studying should be given as much clinical work as possible. Could we not arrange a joint clinic along with other "post-graduate work" in dentistry, where there would be good hospital equipment and good clinical material associated with work in pathology and histology.



#### Discussion of President's Address.

Dr. D. Willard Flint, Pittsburgh. As our president has just said, to-day we are meeting in a foreign country. To many of us it is just like coming home. It may be a coincidence, but Dr. Rogers, of Boston, is a Canadian, and as

two Canadians, Dr. Young and myself have been appointed to open this discussion, it seems to me it is pretty much all Canada for the first round. It is twenty-three years since I first met Dr. Hume on the football field, and to-day we meet again in the quest for knowledge; a different kind of game.

The first point the president brought up was as to the time of our meeting. This is a much debated question and always will be because we cannot suit every member, and there are good reasons why we are meeting here at the present time. I think there is a resolution with reference to next year's meeting place, so that we cannot discuss that part of the address. I believe by resolution the association has already decided to go to the Coast in the year 1915.

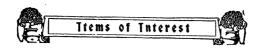
With regard to nomenclature, we have a good many old heads in our Association and it is pretty hard to get them to give up some of their pet terms because they have used them during their professional lives. and I imagine we will have a worse battle over terms than over anything in our society, because some people do not wish to yield in that respect:

Dr. J. Lowe Young, New York City. Our president has called attention to the advisability of selecting a more suitable time for our meeting than the forepart of July and with this I most heartily agree and wish to amplify. We have

but one meeting a year and it should be the object of every member to give and receive as much information on the subject of orthodontia and collateral branches as is possible, if we hope to keep pace with the rapid progress of our specialty. It is questionable if any of us are at our best at the beginning of our vacations; if we were we would not require a vacation.

Excessive hot weather is very depressing and we usually have a hot spell the forepart of July. Let us hope for cool weather during this meeting.

I am also very much opposed to this body changing its date of meeting so as not to conflict with the meeting of some other association, or to be just before or just after some other dental meeting. When a time of meeting is selected let that be final.



#### Post-Graduate Work.

I do not agree with our president when he suggests that this society might engaged in post-graduate work. I am convinced that for graduates of dental colleges to be qualified to specialize in orthodontia, it is

necessary that they should take a course of such length and such thoroughness in all its details that it will be impractical for this or any other society to give such a course. I trust that the time is not far distant when some dental department connected with one of our universities will take this matter in hand and establish a post-graduate course, and that it will be conducted on broad and scientific lines, and that there shall be a continuous clinic under the supervision of a competent orthodontist who will be paid salary enough so that he can give up his entire time to this clinic and to scientific research work. This course to be thorough should extend over a full college year, and a degree might be created and conferred on those qualified to specialize in orthodontia. It is rare indeed for a general practitioner to be found qualified to treat malocclusion, except of the simplest kind. I am a firm believer in specialization, and for this to continue we must have a place to properly prepare men or women to specialize.

#### Dr. B. E. Lischer, St. Louis.

I desire to discuss just one point in the president's address. I am very glad to note that he refers to the educational problems, and that our discussion of them this year is so in earnest. I wish

to recall at his time that I referred to them last year, that I emphasized the fact that our specialty merits full university recognition. It seems that Dr Young agrees with me this morning on the subject of education. I believe this society ought to appoint a Committee on Education, which could co-operate with similar committees from other bodies, and thus mold the educational tendencies of the entire country—in so far as our specialty is concerned. It seems to me that we owe this to our specialty, to our society, to ourselves and to the young men who are to follow us.

#### Dr. C. A. Hawley, Washington, D. C.

I am heartily in accord with the recommendations in the president's address, but many of the points he raised are to be discussed at another time. For instance, we have a committee who are to pre-

sent a report on nomenclature, and I presume from the personnel of the committee the report will be a complete one.

The time of our meeting is set for next year. So far as this time of meeting is concerned—that is, at this time of the year, I think that has been discussed from year to year pretty thoroughly, and it is impossible to set a time that suits everybody. If we set it for September or after vacation, we find the different members commence their work at



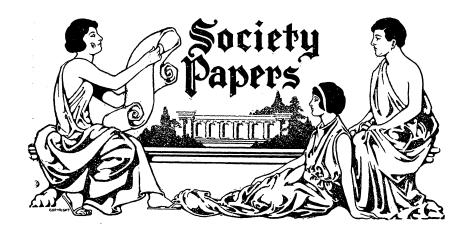
different times; some the first of September and some the first of October, according to locality, and no one time is convenient to all. We have had some of our best meetings in the middle of the professional year, along about January. If the members of the association were not scattered over such a vast territory, I think that would be one of the best times we could possibly meet, but it means to many a trip of three or four days in length, and to meet at such time takes a great deal of valuable time. It seems to me this is really about the best time we can possibly meet; it is in the early part of July; our work is generally finished; it is the time of the meeting of the National Dental Association when many of us have to make a trip, and it is about as suitable a time as we can find.

The president's recommendations in regard to education, I think, are very apropos. The recommendation of this association to the colleges should have some weight and it should have a definite plan. I think the suggestion is a good one that we have a committee on education or a council, as it has been called, which can make suggestions when called for, and make a sort of recommendation as to what is desirable in an undergraduate school. If a degree is to be given, what is the plan or the course of study? I think a council would do very good work along that line.

As to this society taking up post-graduate work, my idea in suggesting it was to bring out the point alluded to by Dr. Lischer of having a committee appointed to thoroughly investigate and report upon post-graduate work. I do not know that our association, as an association, should adopt post-graduate work.

The other points have been discussed so thoroughly that I really can think of nothing further to say.





### Report of the Work Done by the Denver Oral Hygiene Committee

Prepared by Henry F. Hoffman, D.D.S., Denver, Colorado. Read before the Denver Dental Association, December 15, 1913.

The present members of the Denver Oral Hygiene Committee, in the order of their term of office, are: W. A. Brierley, Will P. Smedley, A. C. Hamm, H. F. Hoffman and R. A. Adams. H. W. LeFevre, H. A. Fynn and J. L. Howell are retired members.

We wish to take this opportunity to thank the profession in Denver for the generous moral and financial support which has been accorded to the committee, and we only hope that the profession feels as enthusiastic over the work as we do, for it is one of the great enterprises now taking tangible shape to lift our profession to the position to which we have so long aspired.

At about the time that the clinic work was planned it became the fixed object of the committee to have this work ultimately carried on as a part of the public school system, and the committee has since worked with that one object in view, being assisted materially by other members of the profession who were not members of the committee.

The free dental clinic, started in the West Side Neighborhood House, was opened for patients January 18, 1912, and operated for the balance of the school year, or approximately five months, after which it was moved to its present quarters at the Longfellow School, where it was operated for the entire school year of 1912 and 1913.



DOE, JOHN

Date of Birth Nov. 25, 1898	School Annunciation	Grade 8th
Father's Name J. L.	Occupation Laborer	Business Phone
Mother's Name Margaret	Residence Marion St.	Home Phone
When Reported	Investigation True	
Previous Marriages		
Divorced Separated	l No. Boys	No. Girls
Religion	Nationality	
Wage John, \$6.00 per wee	:k	Rent \$10.00
Permit to Work Oct. 8, 2506	Legal Notice	
Remarks		
Six children; two	in school; three under age	; father
sick much of the	time; only girl cripple; Joh	ın learn-
ing trade with	American Forge Co. Ma	ade two
grades in Night S	School last year. Will atten	d Night
School this year.	•	
		•
р. s. т. 4-13-2м 858	Fig. 1.	

#### Clinic Taken Over by School Board.

Up to that time the expense was borne entirely by the dentists, but in the fall of 1913 the School Board undertook to bear the expense, appropriating \$1,200 to carry the work on during the remainder of the school year. Under this arrangement the

clinic was reopened about October 1, 1913, with the understanding that the Denver Dental Association, or its representatives, should have charge of the actual management, this latter part of the arrangement being made at the request of the School Board.

The decision of the School Board to take up the clinic was made purely because they were convinced that children suffering with bad teeth could not do good school work, and that to remedy these troubles



BLANK,	GERTRUDE

Date of Birth	Dec. 25, 1898	School A	dams	Co.	Grade	8th
Father's Nam	e John	Occupation	Mot	her, laundre	ss Busine	ss Phone
Mother's Nan	ie Emilie	Residence	7550	Clayton St	. Home	Phone
When Reporte	cd	Investigation	оп Т	rue		
Previous Mar	riages					
Divorced	Separate	d	No.	Boys	No. Gi	rls
Religion		Nationality				
Wage Mothe	er, \$2.00 per d	ay; Gertrude	2, \$4.0	o per week	Rent	\$8.00
Permit to Wor	rk Sep. 15, 2412	Legal Notic	e			
Remarks						
Seve	en children;	four in sc	hool;	one girl	(16) ill	;
fath	er nearly b	lind; moth	ner v	vashes ev	ery day	•
Gert	rude is work	ing at D.	& F's	S.		

Fig. 2.

would in the end be an actual financial saving to the district by reducing the number of pupils who fail in their school work.

Fig. 6 shows a view of the waiting room at the Longfellow School Clinic, and gives a fair idea of the way in which the clinic is patronized. Fig. 7 is a view of the operating room.

Method of Hamitting Patients.

When the clinic was first started the chief difficulty encountered was in the method of admitting patients. The plan to have all patients come through the Attendance Department of the public school was finally adopted and has proved most

satisfactory, and is in use at the present time with such slight improvements as experience has made necessary.

A brief explanation of this system will doubtless prove interesting to you as affording a better understanding of the methods employed



#### **DENTAL-CLINIC**

Appointments for children at the Dental Clinic must be made through the Attendance Department.

Principals will send only those children whose parents cannot afford to pay even a small fee for the work.

The age of children treated at the Dental Clinic is limited to sixteen years.

Night school children under sixteen, have also clinic privileges as above.

The hours of the Dental Clinic are from 1:30 to 4:00 P. M. Tooth brushes may be purchased at the Clinic for seven cents.

MARGARET T. TRUE,

Attendance Department.

Approved:

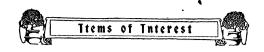
WILLIAM H. SMILEY, Superintendent. Denver, Colo., October 14, 1913.

Fig. 3.

for referring patients to the public school dental clinic. The Attendance Department is the department of our public schools to which is delegated the enforcement of the compulsory educational law; in connection with which work it is necessary to examine into the various causes, contributing to delinquency as health and financial condition. Very complete records are kept of all the children in the schools, coming from families which are deserving of assistance. Figs. 1 and 2 are from the records of the Attendance Department, and are fair samples of the records which they have of these cases. Each of these cards is worthy of careful attention, as they give a better idea of the utter impossibility of these people paying for any kind of dental services, and it will not be hard for you to understand the great assistance such as a clinic is to these people.

Fig. 3 is a copy of the circular letter issued by the Attendance Department, giving instructions to the principals relative to referring patients to the clinic.

In a few instances pupils apply for dental services to the principal, but in most cases the teacher suspects something wrong and refers the pupil to the principal of the school. The principal telephones to the Attendance Department to ascertain whether or not the pupil is eligible for the free clinic.



#### DENVER PUBLIC SCHOOLS

SCHOOL DISTRICT NUMBER ONE IN THE CITY AND COUNTY OF DENVER, COLORADO

#### FREE DENTAL CLINIC

ROOM 5, LONGFELLOW SCHOOL 13TH AND WELTON STREETS OFFICE OPEN FROM 1:30 P. M. TO 4 P. M. SCHOOL DAYS

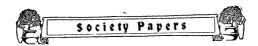
Address

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AgeSchool	
s recommended for free dental services.	
Th.	
 Бу Бу	
Fig. 4.	
DENVER PUBLIC SCHOOLS	BLANK 97, D.S.T. 12-12-3M 624
School District Number One in the City and County of Denver, Colorado	
WILLIAM H. SMILEY, : : Superintendent	
School. Den	
Mr	•
Dear Sir:	
An examination of	
made in compliance with the School Law of	
fectiveness	-
examination by some competent physician, an	
you kindly have such an examination made, physician's report properly made out on the	
Respectfully,	•
	Principal
Fig. 5.	•

In the event that the pupil is eligible for the clinic, the principal is notified of the fact, and at the same time is told what week to send the patient to the clinic, and a card, Fig. 4, is issued to the patient, which card is presented at the clinic where an examination is made and the patient is given an appointment and an appointment card.

This appointment card is shown to the principal or teacher and the pupil is credited with attendance at school for time spent at the clinic.



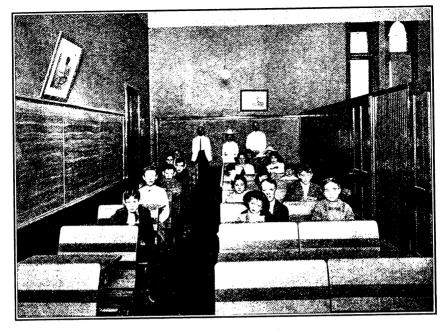


Fig. 6.

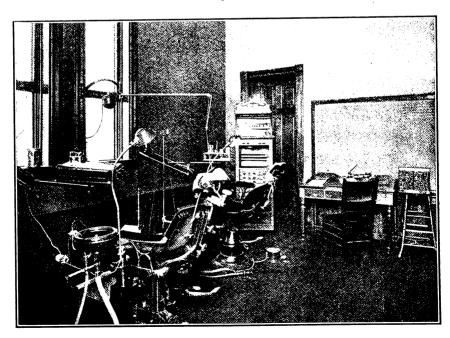


Fig. 7. 817

#### REPORT OF PHYSICIAN

I have examinedin with your notice to the parent, and find the following condition instituted the treatment as noted.	
(Signed)	
	hysician
Address	
Fig. 8.	

However, in cases where appointments are not kept the principal is notified and the pupil loses credit for the time, and the matter is investigated for further action.

In the event that the pupil is not eligible for the clinic, but is being hampered in school work by the need of medical or dental services, the principal or medical inspector issues a card, Fig. 5, to the parent or guardian of the pupil requiring that the matter be attended to within a reasonable length of time.

Fig. 8 shows the reverse side of this card, which must be filled in by the physician or dentist by whom the case is treated, certifying that the request has been complied with, and this must be returned to the principal before the pupil has a clear record. In cases where this card is issued to pupils who are subjects for the free clinic, the card is certified by the superintendent of the clinic.

While the clinic was operated by the dentists, the work of the superintendent was supplemented by the volunteer services of some one dentist each half day. As now operated by the School Board, the superintendent, at the request of the Board, is assisted by one senior student from the Colorado College of Dental Surgery, the college very willingly consenting to this arrangement, and the seniors take turns in attending for a week at a time.

The clinic, open every school day from 1:30 to 5 P. M., is working to its full capacity, and the Attendance Department has a large waiting list, showing that the clinic is even now unable to take care of the number of patients who are entitled and desirous of obtaining the service.

Reports of the work of the clinic are returned weekly and monthly. An effort is being made this year to further increase the efficiency of the clinic by doing more permanent and less temporary work. No permanent teeth whatever are extracted where they can possibly be saved. All first molars are retained unless they are actually decayed



Time Operated,	19125 months 1912-19139 months (school year)			
	Total 1.4 months or 280 days  Denver Dental Association	6		
	by dentists for service at clinic, 280 half	700.00		
	Total cost anent equipment			
\$1,982.30 Charge annually 20% of cost of permanent equipment for repairs and deterioration one and one-half years 30% of \$437.00				
Average co	Actual cost patients treated	\$2,113.40 ents		

beyond the bifurcation of the roots. The increase of the quantity of amalgam used is of itself an indication of the improvement being made.

Beginning this year the salaries of the superintendent and assistant have been increased fifty per cent. or more, and it is interesting to note the result of this increase on the character of the work done and the cost therefor.

## Cost of Operating Elinic.

Fig. 9 gives the cost of operating the clinic for fourteen months, up to the time when it was taken over by the School Board, also the number of patients treated and the average cost per patient. Fig.

10 is a statement of the work done during the school year of 1912-1913, in comparison with that of October and November of the current school year.

This chart shows that the value of the work done in October and November, 1913, was ninety-five per cent. in excess of the cost of operating the clinic, while in 1912 it was only ten per cent. in excess of the cost of operation.

Effects of the Clinic.

Now, what has this clinic accomplished? Twenty-eight hundred children will grow up with a new idea of dentistry. Counting five persons to a family, fourteen thousand persons have been brought



School Year, 1912-1913.  Total different patients2,073  I Amalgam filling for every 6 patients I Cement filling " " 6 " I Cleaning " " 8 " I Extratcion " " 2 "		Oct. & Nov. 1913-1914.  ifferent patients290  I for each I for every 3 I " " 4 I " " 2		
Examination 792		139		
Cleaning 280 at 1.00	\$280.00	70\$70.00		
Extraction 1,013 at .50	506.50	156 78.00		
Amalgam filling 344 at 1.00	344.00	281 281.00		
Cement filling 364 at .50	182.00	114 57.00		
Gutta Percha filling		18 at 50c 9.00		
Root filling 177 at 1.00	177.00	28 at 1.00 28.00		
Abscess treatment		I		
Arsenical Devitalization 119		40		
Removal Dead Pulp		29		
Treatment 458		73		
Replantation		I		
	<b></b>			
	\$1,489.50	\$523.00		
Operating cost	1,328.30	267.00		
Value over operating cost	\$161.20	256.00		
value over operating cost	10%	95%		
,				
Fig. 10.				

into closer touch with dentistry, and in many instances for the first time.

The common belief that those things which are not paid for are not appreciated may be true in a measure, but the healing arts are expected (in fact, it is one of their universal tenets) to extend relief to their more unfortunate brothers, and a profession enjoys a degree of appreciation and respect in proportion to the extent to which the benefits of that profession are extended to humanity. In other words, in proportion to the way in which that profession lives up to its ideals.

The actual recipients of these gratuities may not fully appreciate what has been done for them, but they do have a higher respect for our profession. Every patient treated will grow up with the knowledge that their children ought to have dental attention.

In addition, the thousand teachers in the Denver Public Schools have gained a better conception of dentistry, both as to the general need and benefits thereof.

Oral hygiene work will soon outgrow its name, if it has not already done so, for the name seems entirely inadequate to convey its scope and importance.

The work now becomes one of extending the field of dentistry; ex-



tending its benefits to unfortunate humanity; extending the general appreciation of the need and importance of dentistry, and raising the standard of our profession and improving the services rendered.

The term "oral hygiene" gives but little hint of such a field, and in speaking of the work now it is well to remember what it is we mean by "oral hygiene."

#### Duty of Professional Men.

Every effective professional movement for the betterment of humanity and professional advancement must emanate from and be carried on by the profession as a body, and each member of the pro-

fession owes it as a duty to the profession and to himself to aid in that work

Independent efforts are not a substitute for society work; for example, good-hearted John Brown, a carpenter, nails a few shingles on an old lady's roof to keep her dry and warm, and by so doing he helps the old lady, he himself feels more like a man for the act and he raises himself in the esteem of his neighbors. He has done a simple, kindly, neighborly act, one of the things all men should be doing much more frequently. However, his act did not help the cause of carpentry in the least. He did not do that thing because he was a carpenter, but simply because he was a man. On the other hand, had the carpenters of the country arranged that every poor person should have a dry roof, carpentry would immediately have acquired quite a different standing.

This illustrates clearly our relative obligations as men and dentists. Individual benefactions, even though they be in the form of dental services, are neighborly acts, while those accomplishments which are the result of combined society work are professional.

I mention these things to correct the point of view of so many who offer as an excuse for not helping in society work "that they are caring for the teeth of the Widow Jones' children and think that that is enough for them to be doing." It may be enough of that kind of helping, or it may be too much; but whether enough or not, it is not a substitute for the society work which every professional man should be actively as-assisting in.

I have spoken of the past and present, now what of the future? When favorable conditions present, we should be in a position to start new dental clinics, and a reserve fund should be established for such contingencies. In the meantime, our efforts should be directed to seeing that the school clinic already established is successfully continued, with an enlarged capacity, as conditions require.

The committee now has a very desirable opportunity to undertake an entirely new work in Denver. This consists of carrying out actual



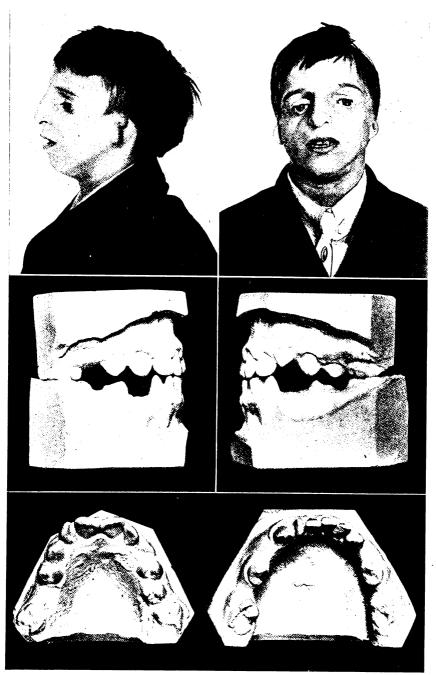


Fig. 11. 822



mouth hygiene work in one of the special classes in the public schools.

## Creatment of Special and Exceptional Classes.

At the Corona School there are a number of retarded classes which are known among the school authorities as "special classes," and also there is a class of mentally and physically deficient pupils which is known as the "exceptional class." This

latter class consists of about twenty pupils in charge of two teachers. Some of these pupils were referred to the clinic at the special request of the medical inspector that something be done for them, as they were being hampered physically and mentally by the condition of their teeth. The needs being more extensive than could be undertaken at the clinic, the cases were referred to the committee. A plan was outlined whereby the teeth of the entire "exceptional" class were examined by Dr. Walsh, superintendent of the school clinic; Dr. Dorr, medical inspector of the public schools, and a member of the committee, with the object of ascertaining how many of this class were really suffering from such conditions.

The result of this examination disclosed the fact that the exceptional class had been cared for very well and relatively few actual cavities were found in the teeth, there being among the seventeen pupils, five pupils needing fillings, and the same number who were actually suffering from malocclusion sufficient to interfere with nutrition; however, the mouths of all of these pupils were in extremely unhygienic condition from the lack of efficient effort at cleanliness.

The plan proposed is to give this entire class a thorough prophylactic treatment, and immediately thereafter institute tooth brush exercises under the supervision of the teachers. For this purpose it would be necessary to purchase the very best of brushes, replacing them as soon as they show symptoms of wear sufficient to interfere with their cleansing properties, each child to have a brush and cup marked with its own name or number, cups and brushes of each child to be kept separate, rinsed thoroughly in a solution of formaldehyde after use and placed in a formaldehyde sterilizer cabinet under the charge of the teachers.

The advantage in taking this work up is that this class is constantly under the careful observation of the medical inspector, the principal, the teachers of the class and the school authorities, and everything is done for the class, which promises to be beneficial. This class of about twenty pupils is in charge of two teachers, which, with the other special needs, probably make this the most expensive class which the district has to maintain; which fact will of itself tend to make the school people even more than ordinarily observant, particularly as they all favor the plan. As no fixed schedule of studies is required for this class, sufficient time can be given to the details to make prophylactic exercises effective. These



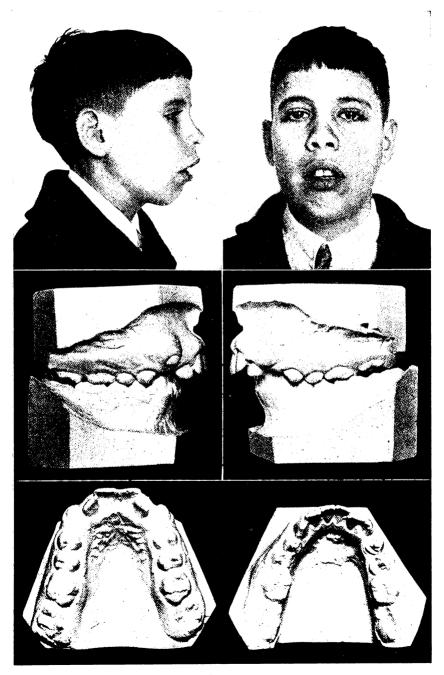


Fig. 12. 824



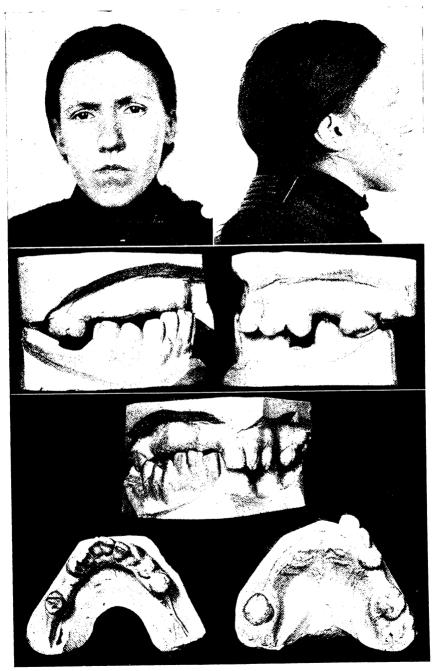


Fig. 13.



are ideal conditions for making such an experiment and for recording the benefits resulting therefrom.

A few illustrations will give an idea of the condition of some of these pupils.

Fig. 11 shows a boy aged thirteen. Both external auditory meatii and the malar bones are lacking. The rudimentary ears have been grafted on. The internal ears are all right and he hears through his mouth and nose; but, of course, the acuteness of his hearing is greatly interfered with. The casts of his mouth show that proper mastication is impossible, and that the upper arch is very narrow, which probably contributes largely to his mouth breathing.

Fig. 12 is a boy eleven years of age. He also is a mouth breather. He has had adenoids removed and now has no nasal obstruction, but, as is shown by the illustrations, he cannot properly close his lips, while his tongue space is restricted by the narrow arches. Unless something is done for him he will go through life looking like an idiot and will gradually come to keep pace with his looks.

Fig. 13 shows an extremely unfortunate case of a girl of seventeen. The casts show what is left of her teeth. On the right side the upper molars practically touch the lower gums, while the remaining lower teeth touch her upper gums. On the left side are the only two of her teeth which occlude. In such a condition this girl is more hampered in life than though she had two legs cut off.

As mentioned before, there are only five in this class who are in need of operative work, all of whom can be easily taken care of at the School Clinic. There has been no difficulty in getting volunteers to take the other five cases which are in need of orthodontic treatment. With the addition of the prophylactic work as outlined, the mouths of the entire class would be put in efficient and cleanly condition.

The value of such work cannot be overestimated. The broader and more humanitarian our profession, the more honor is attached to belonging to it, and the greater the advantages accruing therefrom and the greater the responsibilities. Within the next five or ten years the vital history of dentistry will be written in the value of its services to mankind.



#### Fetid Breath.

By Theodore W. Corwin. M.D., of Newark, N. J. Read before the Central Dental Association of Northern New Jersey, Dec. 15, 1913.

Mr. President and Gentlemen of the Central Dental Association:

It gives me profound pleasure to be among you this evening. I am mindful of the honor you have conferred upon me in asking me to address you, and only regret that you should have to bear so terrible an infliction.

"O, my offence is rank, it smells to heaven."

But it is a great satisfaction to know that we stand upon common ground (!) as well as that we work together for human welfare. Our interests evidently are so closely intermixed as to have become, in not a small degree, mutual.

In 1910 I presented to the members of the Clinical Club some remarks upon offensive breath.

"I counted two and seventy stenches, all well defined, and several stinks."

I have since done some exploration, but will not promise that I can regale your suffering senses to any greater extent, and fear that I must exhibit "a very ancient and fishlike smell."

Seriously, we both encounter many cases in which foul breath is a marked, and sometimes, a characteristic feature, so that it may be important to consider together the factors concerned in the cause and cure of such annoyances. I assure you that much can be done to remove this symptom which makes life miserable for many people, both among those who are immediately affected and among the others like ourselves who must often encounter it at short range.

The normal breath of expiration possesses no odor, but it usually differs from that of inspiration in being warm and steamy from its higher content of heat and vapor of water.

Foul breath in itself seems not to work much direct injury to the organism, but to be most active by causing mental depression and thereby lowering the general vitality. The underlying affections, however, which go to produce the different forms of fetid breath are all injurious in themselves and constitute disease of various kinds. These conditions should always be sought after and combatted.

Odors Analyzed. The nature of odors of whatever kind is not well understood. Their constitution is a chemical one, however, and a study of their formulæ shows that their molecules have considerable weight. (See Note A.)

"Ramsay has pointed out that as a general rule substances having a low molecular weight have either no smell or simply cause irritation of the nostrils. He also shows that in the carbon compounds increase of specific gravity as a gas is associated to a certain point with a sensation of smell." "In the Marsh gas series—Marsh gas which is eight times as heavy as hydrogen gives no odor: ethane fifteen times as heavy as hydrogen has a faint odor; propane, twenty-two times as heavy as hydrogen, has a distinct odor. Among the alcohols a similar relation obtains. Methyl alcohol has no odor; Ethyl alcohol, that of ordinary use, when free from ethers and water, has a slight odor, and the odor rapidly becomes more marked as we rise in the series, till the limit of volatility is reached and we arrive at solids with such a low vapor tension that they give off no appreciable vapor at the ordinary temperature." To produce the sensation of smell a substance must have a molecular weight at least fifteen times that of hydrogen.

The odorous substances must be present in the atmosphere in the state of fine subdivision, or existing as vapors or gases. The fineness of the particles is remarkable because if the air conveying an odor be filtered through a tube packed with cotton wool and inserted into the nose an odor is still discernible. This completely removes from the air microorganisms less that the 1/100.000 of an inch in diameter. Substances exciting smell are no doubt usually gases or vapors. Graham notes that odorous substances are, in general, readily oxidized. They must also be soluble in water for the free olfactory surfaces of the nose are always covered with a thin layer of fluid, and the vapors must become dissolved in it to reach the olfactory rod cells. Moisture aids olfaction: thus it is well known that the odors of flowers are most distinctly perceived in the morning, or after a shower, when the atmosphere contains a considerable amount of aqueous vapor.

It would appear that the odors of animal effluvia are of a higher specific gravity than the air, and do not readily diffuse—a fact which may account for the habit of the pointer and bloodhound of keeping the nose to the ground. Such odors are very persistent and are apparently difficult to remove from any surface to which they have become attached. For illustration: the odor of a corpse may haunt a living person for days, notwithstanding copious ablutions and change of clothes.

A grain or two of musk will scent an apartment for years and at the end of the time no appreciable loss of weight can be detected.

One part of sulphuretted hydrogen in one million parts of air may be perceived. The odor of mercaptan has been experimentally detected



when the dilution was I to 50,000,000,000, and it was calculated that the weight of mercaptan so detected in 50c.c. of air was I/400,000,000 of a milligram.

(These data upon the nature of odors have been obtained from the article "Smell," in the *Encyclopedia Brittanica*, written by John Gray McKendrick, Professor of Physiology in the University of Glasgow.)

No satisfactory classification of odors has been

Classification. found possible.

Of fetid odors, Dr. Hutchinson of London has indicated the following types:

- 1. Putrefactive type—as in cheese.
- 2. Sulphureted hydrogen type—as in gangrene.
- 3. Garlic type—as from arsenic or bismuth.
- 4. Sweetish type—as in diabetics and beer drinkers.
- 5. Toxic or Hepatic types—as in biliousness and dyspepsias, but we can also recognize others as:
  - 6. Ammoniacal types—as found in urinary disorders.
  - 7. Acid types—as found in rheumatism.
  - 8. Aromatic types—as found after use of foods and drugs.

Different degrees of heat and moisture in the breath modify its odor. Odors also vary in intensity or pungency. Other distinctions are made but are difficult of application. In fine, it may be said that some of these substances baffle description, beggar language and outrage our sensibilities.

The sources of foul breath may be usefully

Primary Origin. divided into two great classes.

- I. Those arising outside of the respiratory tract, or systemic effluvias.
- 2. Those which arise within the respiratory tract, the mouth included.

#### Class 1. Effluvia from without the Breathways.

These are true exhalations, that is, they all exist in the blood before they appear in the respiratory passages. They are excreted out of the blood into the lungs, and from the lining membrane of the whole breathing tract, of which the lungs are only an expansion. Such odors also transude in the exhalation from the skin and other surfaces which are exposed, and appear in the urine and other fluids. These odors may arise at any point and be conveyed thence in the bloodstream, thus arriving at the lungs.

When the enunctories, or eliminating organs of the body fail to sufficiently remove the products of internal metabolism, they may escape into the respiratory tract and taint the breath. Thus the intestinal glands

may be inactive so that excrementitious products accumulate in the blood and finally escape into the breath, as in cases of constipation. Again, the production of such products may for a few moments be so rapid that the glands cannot act in time to prevent an overflow.

In cases of pulmonary tuberculosis which are often associated with badly depraved systemic conditions, I have very frequently detected a fetid, almost fecal state of the breath. This is most conveniently recognized by observing the contamination of the mouth thermometer.

Some cases of fetid exhalation have been observed to occur during highly emotional conditions. In these it may be conceived that their production rate exceeds that of elimination.

The urinous contamination of the breath may also be accounted for by the failure of elimination, where the kidneys fail, as in uræmia. The sour breath of rheumatic patients may also proceed from such failure. Various fevers, toxæmias, septicæmias and diabetes may also be cited.

Other conditions in which the blood gives off fetid exhalations are those in which it absorbs fetid products from distant surfaces. Thus in constipation with accumulation of bowel contents gaseous products are absorbed, carried to the lungs and then exhaled. Various aromatic elements of food and drugs are thus absorbed from the alimentary tract and appear in the breath as, "on the morning after."

Another set of odors which may be exhaled from the blood are those which have first been *inhaled* from without the body. Thus the air we take in may be offensive and its offensive principles may be absorbed into the blood and be subsequently *exhaled*—perhaps for a long time afterward.

Thus after inhabiting closed rooms which have become offensive the breath may show the same fetor for many hours after removal into an entirely pure atmosphere. We often find how rapidly a perfectly pure room may become contaminated by the exhalations of those who habitually live in close unventilated apartments. The odors arising in the course of many manufacturing processes may be thus transmitted, and many other instances might be cited.

It must be recognized that these causes may be and frequently are associated with the odors arising from absorption of the same emanations by the skin, hair and clothing of the workers and their subsequent escape from these parts.

Such distinctions are hard to make as a rule. The tendency of the most recent observers has been to emphasize the importance of the external sources just mentioned. Peculiar odors of the dissecting room may cling to the person of the anatomist after thorough bathing and complete change of clothing.



Sometimes and perhaps happily, odors springing from parts outside of the respiratory tract may be *subjective* only, so that they are recognized by the bearer alone. Instances may be found among cases of constipation, abscesses and tumor of these organs. But most cases of ill-smelling breath are most truly objective in character whether subjective or not, and they can readily be perceived by all whose faculty of smell has not been destroyed. This is esepecially true of the second class of stenches: viz., those arising in the course of the air passages.

We have now considered many of the prominent occasions of fetor affecting the system in general, and although that category is by no means exhausted we may turn to such as spring from conditions localized in the breathing tract, which we have called Class 2.

#### Class 2. Odors Arising within Respiratory Cract.

The local causes of fetid breath are also greatly varied both as to their character and points of origin. Any part of the breathing tract, inclusive of the mouth, may furnish the conditions which produce this symptom. I shall say nothing in this assembly of past masters of dentistry, regarding odors proceeding from the teeth and the mouth. I need but to listen and learn.

The local causes of foul breath may be divided anatomically into:

A—General.

B-Nasal and nose pharyngeal.

C—Buccal and dental.

D-Pharyngeal.

E—Laryngeal.

F—Pulmonary.

G—Communicated from adjacent organs.

These all differ from the first class in that they have not been exhaled through the respiratory mucous membranes, but have become deposited upon them, independently of respiration. Their effluvia may therefore be described as being additions to the breath proper instead of essential parts of it.

It will be convenient to first consider cases of nasal origin.

Here, catarrhal conditions, of course, predominate. The altered mucous flow, however, gives no offense to our smell so long as it escapes with normal

rapidity. When for any reason it is retained it soon changes and gives offensive characters to the breath. When pus appears in it other offensive characters arise, and the exhalation is described as heavy, sweetish and somewhat disagreeable. When free access of air to these discharges is withheld they rapidly become foul. This is found when these dis-

charges form thick and adherent masses and the air current dries up their exposed surfaces into crusts. These latter prevent the penetration of oxygen and light to the undried matter under them, which rapidly putrefies. Putrefaction is inhibited to a notable degree by the normal fluids of the nose, but when crusts have formed these cannot exert their wholesome influence. The same remarks will apply to discharges retained within cavities to which access of air is prevented by the swelling and closure of the passages leading to them.

In the later stages of nasal colds an offensive breath occurs frequently and is due to alterations of the sticky adherent muco-pus. Irrigation of the nose and naso pharynx with saline solution gives prompt relief. When mucus and pus, and perhaps blood also, are so long retained that a crust is formed over them, odors of the rottenest kind are liable to occur. Such types are embraced under the title ozæna. The German designation "Stink nase" indicates this with more directness. Even in these frightful cases, when cleanliness is accomplished and rigidly maintained all odor ceases. Cases of simple ozæna are rare in which this is not practicable. Commonly the patient has lost his sense of smell and cannot perceive the stench which he bears about.

When catarrhal conditions extend beyond the main nasal channel so as to involve the sinuses, such as the maxillary sinus or antrum; or the frontal, ethmoidal or sphenoidal sinuses, a persistent discharge occurs. If obstruction to the rapid escape of this exudation exists a foul odor is liable to develop. Under such circumstances ulceration of the bony walls of these parts is apt to ensue. Such cases are commonly relieved by surgical measures which provide free drainage after removal of all degenerated and necrotic tissues.

A very serious occasion of fetor in the nose is syphilitic ulceration Many cases of ordinary ozæna are without doubt wrongfully adjudged syphilitic because both affections have such a horrible stench. Nevertheless the odor of syphilitic ulceration, associated with necrosis of bone tissue, is even more repulsive than that of ozæna. Without joking it is claimed to be so distinctive as to be pathognomonic of the disease. While the odor in these cases arises in materials which are quite separate from the living tissues of the body, its points of origin are nevertheless so difficult of access in most cases that in spite of great efforts to maintain cleanliness the stench can but seldom be more than partially suppressed Happily of all such chronic affections syphilis is perhaps the one most responsive to treatment. With but very few exceptions cure may safely be expected when appropriate treatment is exhibited.

That fortunately rare, but in man fatal, disease of the nose, glanders,



involving as it does extensive necrosis of bone, is the occasion of a very intense stench. Injuries, foreign bodies, and various tumors of the nose may become very foul and even adenoid growths are often an occasion of some odor. Cases of diphtheria develop great fetor in the late stages when unchecked by treatment, but all parts of the respiratory tract are liable to be affected.

This category of nasal types, while by no means complete, may serve to exhibit some features which are common to all types.

# Causes Found in the Respiratory, Cract.

We cannot do much more than *summerize* these at the present time. We recognize that pretty much all febrile conditions, whether simple, septic or specific, may be complicated by local conditions which cause fetor of the breath. These are emphasized

when epidemics of malignant form prevail. Tuberculosis may also act in this way at any point.

In the pharynx we commonly meet two con-Pharungeal Causes. siderable causes of offense. Chronic pharyngitis is liable to be marked by retention of exudates in the enlarged glands, and consequent fouling of the breath. More frequent are the cases of chronic follicular tonsilitis. Examination of these cases show that the tonsillar crypts contain cheesy masses. Whether the tonsils be but slightly or are considerably enlarged the crypts may form large pockets in which secretions, epithelial cells, and particles of food accumulate and ferment with the development of foul gases. Again, cheesy masses may form and escape into the throat when their growth in size exceeds the space in the pockets. They may often be seen projecting from the surface of the tonsils. When such masses are removed and crushed an intensely foul and penetrating odor proceeds. When they are not so situated as to be evident on inspection pressure made over the tonsils from below upward will cause their extrusion or the flow of a very offensive milky fluid. The persistence of such conditions gives rise to much chronic throat trouble, and is also frequently responsible for gastric disorder.

Buccal Causes.

All forms of stomatitis give rise to offending secretions. All ulcerations are liable to become foul, as those from injury, syphilis, cancer, tuberculosis, abscess or other cause. Different forms of metallic poisoning are notable causes, especially those from mercury and lead.

The larynx and trachea may also be affected by all the processes already considered and with the same result of fetid products. In the lungs fetid breath is associated with some cases of tuberculosis and chronic bronchitis, notably where cavities have been formed by ulceration

or by dilatation of segments of bronchial tubes. There is one condition however, which surpasses all other conditions of the breathing tract in the production of fetor. This is gangrene of the lung. Patients having this rare complaint need to have special apartments provided for them. It is a fatal disease.

Lastly we may consider a few occasions of foul breath which are communicated to the respiratory tract from adjacent organs. Cases of discharge from the ear passages into the nasopharynx are instances. Discharges of foul materials, solid, liquid or gaseous, from the oesophagus, stomach and even lower portions of the alimentary tract may be expelled into the air passages. Again abscesses of the pleura, liver, kidneys, etc., may rupture into the pulmonary tubes and convey disgusting effluvia. 14 赛 秦 夏

Let us now consider for a moment the pathology underlying this symptom. The analysis of any one Pathology. of those sources which arise in the respiratory tract will show the presence of the following factors:

> Pabulum—Moisture—Heat—Retention Seclusion from air and light—Bacteria.

There may also be

Alterations in the character of secretions, Defective leucocytosis and phagocytosis.

The first five factors, it may be noted, are just those which conduce in the highest degree to the growth of the sixth factor, the bacteria. All ill odors in Class 2 depend upon the operation of bacteria, which are always present.

The bacteria are such as usually flourish best in the absence of air. or anarobic bacteria. Their activity may be greatly curtailed by providing free access of air to the fetid materials.

We may find relief from this noisome category by considering the means we possess for combatting Creatment.

The treatment demanded by conditions causing fetor may be summarized by reference to several important principles among which I would mention these:

- Τ. Promotion of vitality, both general and local,
- Cleanliness,
- Antiseptics, 3.
- Deodorants.

The outgoing breath is normally sterile and devoid of unpleasant odor. The normal activity of our Uitality. tissues or their cells is antogonistic to bacterial activ-



ity—at least of the kind alluded to. During health the breathing passages and their fluids offer much opposition to the development of fetid processes. The maintenance of vigorous health is therefore of the first importance in combatting a fetid breath. Hygienic living is to be made our first concern. With such support the body has wonderful powers of recuperation. Life in the pure fresh open air, pure water and pure food, well prepared and well masticated, wholesome exercise, sufficient sleep and repose and a calm and hopeful mind are to be sedulously cultivated.

We have seen that fetor is not a product of the vital activity of our tissues. Its origin is therefore outside of them. It resides in materials which are not a part of us. The removal of such materials is therefore indicated and this is what we call cleaning, and when it has been accomplished we have cleanliness, and "Cleanliness is next to Godliness." Cathartics and other depuratives may be considered a means to this end.

When bacterial deposits cannot be immediately removed by measures which produce cleanliness we may employ antiseptics. Pure air and sunlight are natural antiseptics and cannot be used too soon nor too freely. Artificial antiseptics are also agents which restrain or prevent bacterial activity but they are as a rule capable of destroying vital activity also, and hence are usually poisonous. They should not be used when simpler measures can be made available.

There are agents which may be used to conceal or destroy odors without removing their cause. They are obviously of but minor importance. They may even prove harmful by withdrawing attention from measures which would be corrective of the underlying disorder. As the perception of the odors of injurious processes is a great safeguard to our bodies, deodorants are prone to work against our normal security.

The application of these therapeutic principles may be considered in connection with the more important agents commonly employed. We consider, first, correct habits of living, as already suggested; second, fresh air and sunshine; third, pure water; fourth, some chemicals.

Fresh air with its normal content of ozone is of the first importance. Oxygen is death dealing to the germs of putrefaction; therefore provide free and continual ventilation. Sunshine avails much by stimulating our tissues into activity. It also restrains the life and operation of noxious germs within us as well as without.

As water may be said to be at the base of our tissues, its value as a medium of cleanliness is apparent. Water promotes metabolism and secretion

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and assists phagacytosis; it conveys oxygen in solution to festering spots; it dissolves foul vapors, mixes with fluid discharges, and softens and dissolves firmer exudates, floating them away until final disposition is accomplished. Water is further able to carry in solution various other agencies of corrective character, such as salt and other antiseptics.

Air and water are the great natural disinfectants; they are too much feared and too little used. Let both be used externally, internally and eternally.

Sodium chloride, bicarbonate and borate in about one per cent, aqueous solution are very valu-Chemical Hgents. able in effecting cleanliness in the air passages; they also excite the normal secretions and they inhibit germ action. Phenol is well known as a bactericide. In combination with the sodium salts we have just mentioned it helps to constitute the famous solution of the late Dr. Dobell, of London, England. Salol and sodium bicarbonate may be used together in powder form; in contact with water they liberate phenol and salicylic acid. Limewater, potassium permanganate and chlorate are often used. Other valuable formulæ contain chlorine, iodine or sulphur or their compounds, or various metallic salts; notably those of mercury, silver, zinc and alum. Of organic origin we have a long line of aromatic oils and their derivatives—also alcohols and empyreumatic products. Other substances, and some of the above, are prepared synthetically. Digestive agents have been employed to dissolve offensive materials. Hydrogen peroxide is often of especial value, being efficient and nonpoisonous. The neutrallized three per cent. solution when diluted to twenty-five per cent. strength by addition of water may be used upon all open surfaces; in closed or nearly closed pockets it may act dangerously by the rapid liberation of gas coincident with its action. Formaldehyde is a most efficient and powerful agent. Being volatile it has advantages in many cases: its vapor is so pungent that care must be used lest spasmodic strangulation result from its inhalation. The ordinary forty per cent. solution may be used locally when reduced with water to about one per cent. formaldehyde strength. In this dilution it is also a most energetic deodorant for a tainted atmosphere. After being sprayed into the air of a room for a moment the most offensive effluvia will almost instantly be destroyed. Proper ventilation should not be neglected when using this valuable short cut to comfort.

From these considerations it may be said that every man who claims to be scientific should be able to construct all the antiseptic and deodorant preparations his work requires without resort to nostrums.



## note H. Chemistry of Odors.

"The present state of our knowledge does not permit a strict correlation of odor and chemical constitution. One theory regards odor as being due to osmaphoris or odor producing groups in much the same way as color is associated with chromophoris.

Examples are hydroxyl (HO), aldehyde (CHO), ketone (CO), ether (O), nitrite (CN), nitro ( $NO_2$ ), etc. We may observe that N.G., or iso-nitrite is associated with an unpleasant odor.

As a general rule homologues have simitar odors, but many exceptions are known so that members of even the same group are not invariably associated with the same odor. In further explanation it is said that while the triply linked carbon system is generally associated with strong and unpleasant odors, the doubly linked system gives pleasant ones."— From article, "Perfumery," *Encyclopedia Brittania*.

## Report on the Cement Lute in Inlay Work.

By J. B. Parfitt, L.R.C.P., M.R.C.S., L.D.S., England. (Section III. Sixth International Dental Congress, London, 1914.)

It would be difficult to overrate the importance of the cement which fixes an inlay into its containing cavity, for if the cement gives way, the most perfect inlay ever made will be a failure, whereas if the inlay should get broken, or even come out, the tooth will at least be preserved from decay as long as the cement lining remains intact.

With a considerable degree of truth an inlay may be defined as "a cement filling the exposed part of which is to a great extent, although not entirely, protected by a layer of porcelain or metal," and a discussion of the cement lute practically resolves itself into an inquiry as to how far such a composite filling possesses the advantages and avoids the disadvantages of one composed of cement alone.

It may be stated at once that inlays have most of the advantages of cement, such as freedom from molecular change, and from irritation or staming of the tooth substance.

Changes cation or explanation. Laboratory experiments have certainly shown that after setting, cement undergoes changes, both in its internal structure and in bulk; experience seems to show that, under ordinary conditions, change in bulk must be quite small, many old cement fillings on removal proving to have a joint so close that there seems to be almost an actual

adhesion to the dentine; moreover, the particular disposition of the cement when it forms the lute of an inlay renders a slight change in bulk of comparatively little importance; even if there were a very large contraction of the order of I per cent. linear, the effect on a cement margin 50 microns broad would be to open a chink only .5 micron broad, and in all probability the utmost we could expect would fall far short of this amount. With regard to absence of irritation, metal inlays will, of course, conduct heat to the pulp less or more in proportion to the thickness of the cement that lies between.

The important advantage of facility of manipulation cannot be claimed for inlays at all.

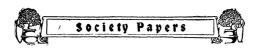
# Disadvantages of Cement.

I will now pass on to the disadvantages of cement. Of these the only one that calls for discussion is its lack of permanence, cement fillings suffering both from mechanical wear and from chemical

solution. Incidentally, this loss of substance frequently leads to the formation of a rough surface, and consequent mischief from lodgment of food.

Mechanical wear, that is the loss of substance by abrasion, is in inlay work prevented by the peculiar disposition of the materials which form the composite filling, as the hard layer of the inlay itself, whether it be metal or porcelain, protects the underlying and relatively softer cement from the stress of mechanical wear; the grave hygienic disadvantage of a rough surface is also avoided, one of the most valuable properties of inlays being that they can be made to take and permanently retain a high polish.

The guestion of chemical solution of the cement lute is one that will demand more detailed consideration than that of mechanical wear, as it is by no means so evident that the layer of inlay material will in this case afford adequate protection to the cement from the fluids in the mouth capable of dissolving it. If the fit of an inlay were perfect, as perfect. for instance, as the fit of a well-made glass bottle stopper, and if such an inlay could be accurately cemented into its place, we should have perfect and permanent protection of the cement lute; in fact, we should have a filling which would be everlasting, subject only to undermining by fresh caries, or the incidence of an overwhelming force. Unfortunately this ideal seems impossible of attainment; perhaps the nearest approach that can be made to it without much difficulty is by the use of the Dall method of grinding both cavity and inlay material to a form with a circular cross-section, the inlay itself being a truncated cone of small taper. In actual practice the protection of the cement is never absolute, there is always some area of it exposed, and unfortunately the dissolving fluids



can penetrate into chinks and round corners and reach places that are quite immune from the attacks of mechanical agencies; in fact, it may be that in some cases they act all the more quickly if they are not subjected to too much disturbance.

From the time when inlays were first introduced, the solution of the cement has always been the point as to which inlay workers have had doubts and fears, and, on the principle of a chain being no stronger than its weakest link, many have no doubt felt that an inlay would last no longer than a plain cement filling; experience, however, has shown that inlays have a very good record for lasting properties, and that in actual fact the cement is protected from solution to a very considerable degree.

## Factors Influencina Cement Line.

In discussing the amount of protection from solution which its peculiar distribution gives to the cement, two questions call for consideration, namely, the factors that determine the thickness of the cement layer, and the influence which this particular manner of distribution has on the rate of solution.

The factors which influence the thickness of the "cement line" are:

- (1) The amount of discrepancy (if any) between the dimensions of the cavity and inlay.
  - (2) The shape of the cavity in sections vertical to the floor.
  - (3) The size of the grains of cement.
- (4) The consistency to which the cement is mixed and the amount of pressure used in forcing the inlay into its place.
- (1) The discrepancy between the sizes of the cavity and the inlay will vary in different cases according to the material and method made use of.

Porcelain inlays made by the usual method of swaging a foil matrix into the cavity or some reproduction of it must of necessity be smaller than the cavity to the extent of the thickness of the matrix. A useful and frequently employed thickness of foil is one thousandth of an inch, or 25 microns, and this would be the width of the chink surrounding the inlay, and consequently the thickness of the "cement line."

In the method invented by and named after Dr. Peck, the thickness of the foil matrix does not come into the problem at all as it is made on a counter, reverse, or to use a photographic analogy, a negative of the cavity, and thus is itself an exact size model thereof in its internal dimensions. In practice it is possible, with care, to make inlays that will go into the cavity with almost what engineers would call a "driving fit."

Of the methods in use for making gold inlays that of the "Alexander plastic gold" probably yields an inlay the size of which is very near indeed to that of the cavity. Theoretically this should be the case, because

the gold is actually molded into the cavity and is never melted in al! the subsequent operations. This conclusion is borne out by experience, as it is quite possible to make inlays by the Alexander method with margins sufficiently good to bear inspection under a magnification of eight or ten diameters.

## Faults of Cast Gold Inlavs.

A somewhat similar result, both theoretically and practically, is arrived at by the "reinforced matrix" method, which consists in casting into a platinum matrix in two stages, the matrix, with its cast "core," being reburnished to the cavity margins before the second casting which completes the contour.

The ordinary or "lost wax" process generally yields an inlay which is too small for the containing cavity. It is not an easy matter to give a definite estimate of this contraction, because it is a sum of several different amounts, due to different causes which fortunately to some extent neutralize each other.

The causes of the discrepancy between the size of a cast inlay and its cavity are:

- (i) The contraction of the wax pattern in cooling from mouth temperature to that of the investment. Some figures given by Van Horn\* show that this is about of the order of .0002 for each degree Centigrade.
- (ii) Expansion of the investment on setting. This may be taken to be much the same as that of plaster, and in the case we are considering would probably be negligible; any influence it would have would be in the direction of lessening the total contraction of the inlay.
- (iii) Expansion of the investment in heating from room temperature to that of casting. This seems to be quite large in amount, Van Horn finding that there was a difference of about I per cent. linear between a block cast in a red hot mold and one cast in a cold one.
- (iv) Contraction of the gold in cooling from its molten state to The co-efficient of expansion of gold is given as body-temperature. .000015 per degree Centigrade between 0° and 100°, so that the total contraction would probably be 2 per cent. or more.

## Faults of Inlavs Overcome by Cavity Shave.

The sum of all these separate discrepancies almost always results in a certain amount of contraction, varying according to the manipulation employed; in some cases it may be as much as I per cent. linear or even more.

(2) The shape of the cavity is of considerable importance in this connection, because in some cases a discrepancy at the margin can be

<sup>\*&</sup>quot;The Wax Pattern: a technique," etc., etc., by C. S. Van Horn, D.D.S., published in Dental Cosmos, 1912, p. 973.



lessened or removed altogether by the inlay sinking slightly into the cavity. The extent to wihch this diminution of the marginal chink can be carried depends on the amount of the departure of the cavity walls from the perpendicular. If the containing walls are perpendicular to the cavity floor, that is, if they are parallel to one another, it is obvious that no amount of sinking in of the inlay towards the floor will diminish the marginal chink at all. In any actual case the distance the inlay will have to sink into the cavity in order to bring its edge into opposition with the enamel margin will be the width of the marginal chink multiplied by the cosecant of half the angle at which the opposite sides of the cavity are inclined to one another: thus if the marginal chink is 20 microns broad and the opposite sides of the cavity are inclined at a right angle to one another, that is if they are each inclined 45° away from the vertical, a sinking of the inlay 28 microns into the cavity will bring it into complete apposition with the cavity wall. In the case of parallel walls cosec. o° is infinity which corresponds with the statement made above, namely, that in this case no amount of sinking in of the inlay will make any difference to the marginal chink: the other extreme case would be the apposition of two flat surfaces, such as might occur in the fitting of a tip to a front tooth, here the opposite walls of the cavity may be considered to be in the same straight line, or to have an inclination of 180° to one another; half 180° is 90°, and cosec. 90° is 1, which corresponds to the fact that here a theoretically perfect joint is obtained by the inlay settling nearer to the tooth by an amount equal to the thickness of the foil matrix used.

These considerations justify us in concluding that with correct cavity preparation and choice of a suitable method we should theoretically be able to make an inlay whose margins are in perfect apposition; we have, however, still to reckon with the cement itself.

Influence of Cement Grains.

(3) The actual size of the grains of the cement is a matter of the greatest importance, as it is certain that many of them retain their individuality after mixing.

Valuable papers have been published, notal

by Head\* and Poundstone,† on the problems of the inlay cement line.

It appears that in the ordinary cements we must expect grains 25 microns thick or even larger, so that it is better to use a cement ground specially fine. We shall probably not be very far wrong if we assume that the size of the cement grains will prevent the reduction of the joint much below 25 microns.

(4) The amount of pressure used in setting the inlay will naturally

<sup>\*&</sup>quot;Tests on the Inlay Cement Problem," by J. Head, D.D.S., Dental Cosmos; 1905, p. 779.

†"The Cement Problem in Inlay Work," by G. W. Poundstone, D.D.S. Published in Dental Cosmos, 1904, p. 756.

influence the thickness of the cement margin to some extent. Some experiments made by Head showed that with a block ¼ in. square, eight pounds pressure with a certain cement gave a firm 15/10,000 in. or about 37 microns, an increase of the pressure to one hundred pounds caused a reduction of the thickness of the film to about 22 microns; with another cement a similar increase of the pressure caused a reduction of the thickness from 25 microns to 15 microns.

A hundred pounds might seem a very great pressure, but we must remember that it was distributed over the area of a ½ in. square, and that what counts in these matters is not the total pressure, but the amount of pressure per unit area. If the floor of the cavity were deepened so that the pressure fell on the margin alone, its intensity in the narrow band around the edge of the inlay might well equal or even exceed that used in Head's investigations. It should be mentioned that Head obtained films as thin as 7 microns, using specially ground cement powdered and a pressure of only 8 lbs. to the ¼ in. squire.

Solution of Cement About Inlavs.

It is this peculiar disposition in a thin layer presenting only its edge to the solvent action of the saliva that explains the relative permanence of the cement forming the lute of an inlay.

Other things being equal, the rate of solution of a substance will depend on the area of it exposed to the action of the solvent and the rapidity with which the saturated solution can be removed so that a fresh portion of solvent can be brought into action.

In this particular case the area exposed is small; nevertheless solution will no doubt go on at first as rapidly as with a plain cement filling in the same mouth. In a short while the exposed edge of the cement will come to lie at the bottom of a narrow and relatively deep chink in which the saturated solution will tend to stagnate, especially as the chink will get more or less choked up with all sorts of insoluble débris. In most cases solution will go on with less and less rapidity, and in many will, after a time practically come to a standstill altogether; in any particular case the rate will depend on several different factors, such as the chemical and physical characters of the cement, the composition of the patient's saliva, and the position of the joint in relation to the bite. In this connection it is, I think, a well established and remarkable fact that although the cement does wash out to some depth, the tooth very frequently remains free from fresh attacks of caries.

The rate of solution may possibly be affected by the nature of the material forming the inlay. Thus it is conceivable that a gold inlay, owing to its relatively large conductivity and co-efficient of expansion for heat, might be subject to frequent small changes in bulk, and so tend to



help the renewal of solvent in the joint: there may also, under some circumstances, be a slight amount of electrolytic action going on at the surface of a metal inlay.

## Influence of Opaque Cements on Porcelain.

The influence of a layer of opaque cement on the appearance of a porcelain inlay deserves perhaps a brief consideration.

on Porcelain.

Both porcelain and tooth substance are translucent materials, and, as with all other bodies, their "shade" will depend both on their own nature and on the illumination they receive; moreover, the light they send to our eyes comes not only, nor in this case even mainly, from the surface, but also from layers which lie deeper down, and in their passage through the porcelain or tooth substance the light rays are broken up and reflected many times.

Under ordinary circumstances the "lighting" of the teeth is from above downwards and backwards, and the apparent shade varies considerably with the raising or lowering of the upper lip. If now a central tooth has its tip restored with porcelain, and an opaque line, although thin, and it may be quite invisible, runs horizontally across it, the relative shades of tooth substance and porcelain will alter with every alteration in the level of the upper lip. The reason of this is that the opaque layer prevents the basal part of the tooth from receiving any light from the occlusal part, so that each gives back just the light it receives from the outside source, and while the porcelain tip remains constantly much the same "shade," the base looks light or dark according to the position of the lip. If instead of a transverse layer there be a vertical one running from before backwards, the raising or lowering of the lip will affect both halves of the tooth in the same way; hence a porcelain restoration with a vertical joint can be so matched that it looks well in all conditions of lighting, whereas one with a horizontal joint will only be at its best if one particular set of conditions is realized, and especially with one particular position of the upper lip.

The same principles govern the lighting of porcelain inlays in other positions; in the case of interstitial cavities in canine teeth, for instance, except that the conditions of illumination are not so changeable, the front part, whether it be porcelain or tooth substance, tends always to throw the back part into shadow, so that mesial inlays should be made darker and distal ones lighter than the original color of the tooth.

(1) The cement lute confers on inlays all the advantages of cement except facility of manipulation.

(2) The thickness of the film at the edge can by suitable choice of method be theoretically reduced to the size of the grains of cement.



- (3) Such a film is in most cases practically immune from solution and altogether immune from mechanical wear.
- (4) With an opaque cement the character of the lighting of a porcelain inlay depends on the direction of the plane of the join.

# Report on the Filling of Ceeth with Cast Gold Inlays and on the Present State of the Art in the United States.

By Rodrigues Ottolengui, M.D.S., D.D.S, LL.D., New York City, U.S.A. (Section III. Sixth International Dental Congress, London, 1914.)

In 1908, at a meeting of the Odontological Society of New York, Dr. Wm. H. Taggart announced a new method of filling teeth, by making a pattern of the desired filling, investing the same in a seamless mold and reproducing this pattern by casting molten metal under pressure. At the same meeting he presented a casting machine with which this process could be successfully conducted.

The announcement and description of this new method of filling teeth aroused a greater interest than had any other announcement ever made in relation to dental practice. Within a year thousands of men were utilizing the casting process, and numerous inventors and manufacturers were offering for sale casting machines, with which the claim was made that cast fillings could be made to better advantage than with the Taggart apparatus. Your reporter believes that this will be an appropriate moment for dealing briefly with this subject of machines.

Casting machines may be divided into three classes: those utilizing direct gas pressure, inclusive, of course, of air, steam, and the like; second, those utilizing the forces exerted by centrifugal motion; and third, the so-called suction machines. Men claim success with all these various devices, but it must be remembered that the minds of men vary, and that personal ideas and standards differ proportionately. Suffice it then to say that in the opinion of your reporter no machine is the equal of the Taggart apparatus, in support of which view he may state that experts in the use of the Taggart machine, both in New York City and in Chicago, have made test cavities, for which they have readily made accurately fitting castings, which experts with other appliances have been unable to duplicate. Conversely, no one has produced a casting with any rival machine which cannot be duplicated with the Taggart.

Early Problems.

With the adoption of the casting process, operators at once met with difficulties and obstacles, which often produced castings so poor that they could not



be used. The faults in the inlays were mainly of three kinds. First, inlays larger than the original pattern; second, inlays showing feathers, in two or more directions; third, inlays spoiled by having minute or even large globular masses attached to their surfaces.

Many extensive and more or less scientific investigations and experiments were undertaken to solve these seemingly unsurmountable difficulties. Multifarious theories and explanations were advanced to account for these harassing troubles. It is worthy of note that men of keen minds and of analytical judgment, nevertheless, advanced antagonizing theories in accounting for quite similar phenomena. I need not take up the time of my confrères in this Congress by recounting the differing views of these different investigators. But let me say this, that in my opinion there would have been less difference of opinion and less divergence of reported results had the investigators been content to take the art as it was given to them by its originator, following his instructions, using his apparatus and materials, and thus working along exactly similar lines of endeavor. nately, this was not the case. Instead of attacking the problems with unbiased minds, our research workers in the main solved the troubles by mental processes first, and then undertook to prove themselves correct by clinical methods, which, however ingerious, were all destined to fall short of the truth, because of the biased state of the minds of the investigators. To make clearer what I am here stating, men who had never used a Taggart machine met definite failures with some other machine, and spent months of energy explaining and accounting for these phenomena as though it were a fact that they would occur with the Taggart or any and all other machines, when often, the particular trouble upon which so much scientific research was expended did not occur at all in the practice of the men who had mastered the Taggart process, using Taggart materials and the Taggart machine. For these reasons it is the firm belief of your reporter that the art to-day would be much farther advanced had the dentists of the world adopted Taggart's apparatus and directions from the outset, and had no other machine ever been constructed. For it is an absolute fact that the men who have done this, those that have studied the process and mastered it; those that use Taggart's machine, his wax and his investment, and use them always in exactly the same manner, have the satisfaction of knowing that every inlay will accurately fit the cavity for which it is constructed. They also know that on the rare occasions when they meet a failure, that it has been themselves, and not the process nor the materials that have failed.



# The Solution of the Problems.

It will be appropriate at this point to explain briefly how the faults met with early in practice are really to be explained and obviated. That they have been obviated is demonstrated by the statement that

in the office of your reporter, and of several other exclusive followers of Taggart's directions, no inlay has been discarded nor made over during the past three years. I have this assertion from men of national reputation and of undoubted honor.

Referring to the three main faults, previously mentioned, let us consider them briefly. First, inlays larger than the original pattern. This was no uncommon experience in the early days of the art, and not a few methods of overcoming the trouble were promulgated. One such method was to coat the outer surfaces of the inlay with wax and then reduce the cavo-surface by immersing the inlay for a short time in a gold solvent. Another proposal was to place the wax pattern in ice water and to mix the investing material with ice water. The evident theory was that the chilling of the wax and the use of cold in mixing the investment would counteract the expansion of the mold when heated up to receive the cast metal. But the true method of producing an accurate casting does not depend upon the utilization, but rather upon the avoidance of extremes of temperature. The wax should not be chilled; the investment should not be made with cold water, and the mold should not be extremely hot when the cast is made. On the contrary, the effort should be made to work as close to room-temperature as possible, the wax and investment thus being neither warmer nor colder than the surrounding air, while the mold itself should be as cool as possible, and consequently as little expended as possible. Success indeed depends more upon the constancy and accuracy of technique than upon the utilization of any extraordinary means of overcoming faults, which should not occur at all. Such a method will be presently described.

The second fault, that of having feathers extending from the casting, is directly traceable to three co-operating causes. First, the use of an investment which will crack during the heating necessary for burning out the wax; second, the presence of these cracks in the investment, especially when the mold is hot at the moment of casting, thus opening the cracks to their ultimate. Third, the use of too great pressure in casting, thus forcing the molten metal into the crevices. The obviation of feathers, therefore depends upon the use of an investment which does not crack at the temperature needed for melting out the wax. Second, upon permitting the mold to become as cool as room temperature will allow, and keeping it as cool as possible during the casting. And, finally, upon using a low pressure, so as to avoid forcing metal into crevices.



Lastly, the presence of globules on the surface of the inlay is mainly due to improper mixing of the investment, or to improper application of the investment compound to the surface of the inlay, or to both combined.

## Che Successful Process.

The following are the essential steps in the process if accurate results are to be had. First the wax used for the pattern should soften at a moderate degree of heat, and should harden at the ordinary

temperature of the mouth. It should not be overheated, but should be softened sufficiently to take an accurate impression of the cavo-surface and of the margins, yet kept hard enough so that the mass of the material furnishes resistance under pressure, sufficient to force the outer surface accurately against the cavity walls and margins. The wax, once seated, pressure should be continued until the wax has fully hardened. This pressure should be constant and in the direction best assuring the certainty of producing accurate adaptation. Pressure continued in this manner guarantees us that the wax is accurately fitted to the cavity, not a few moments prior to its hardening, but at the final moment of hardening, after which there will be no danger of alteration through contraction, provided the wax is not cast into water colder than room temperature. The best method of assuring the unalterableness of the pattern is to invest it immediately, using water at room temperature.

Having thus procured a pattern fitting at the moment of complete congelation, the next step is properly to invest the same. The investment and water should be always weighed so as to insure definite results. It should be slow setting, and should be rotated for at least five minutes to insure the expulsion of air globules. It then should be evenly spread around the pattern and the surrounding secondary investment poured in such a manner that the operator may be assured that during the process the primary investment does not move so as to expose any surface of the pattern, thus inviting the imprisonment of air during the addition of the secondary investment, which, of course, should be made with the same mix of material used for coating the pattern.

The wax should be removed with moderate heat, and this heat should be continued until all gases resulting from the combustion of the wax shall have been eliminated. This heat should never be extreme enough to risk injury to the mold by overheating, nor should it be too long prolonged. A definite burner should be used and a definite time employed for by this means only can definite results be obtained. The mold should then be permitted to cool to room temperature.

Many wonder what is meant by the phrase "casting in a cold mold". By this phrase it is meant that the mold should be as cold as possible.

It will necessarily become heated during the melting of the gold, but it is manifest that if the co-efficient of expansion and contraction of the investing material at that temperature be the same as the co-efficient of expansion and contraction of the melted metal, this slight expansion of the mold aids rather than hinders the accuracy of the result. The gold nugget should be heated almost to the melting point, and then quickly transferred to the crucible of the mold and the blow-pipe flame kept small so as to play on the gold rather than upon the mold. In this manner the gold can be melted to the boiling point, while the metal ring around the mold will be only a little too warm to be taken in the fingers.

The pressure should be low. Those who use the Taggart machine should have the pressure gauge register about five pounds when the blow-pipe flame is used. The register will rise to six or seven when the cast is made. Finally, a large excess of gold will insure a better casting than where a small nugget is used. The above process accurately used will produce inlays which will fit as well as the wax pattern. No process can do better. If the fit is faulty, either the pattern was at fault, or some other step in the process must have been inadequately observed.

# methods of making the Wax Pattern.

When Dr. Taggart first disclosed his method he directed that the wax should be pressed into the cavity of the tooth itself, carved into desired shape, removed and reproduced in gold by casting. This

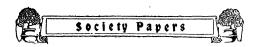
has now come to be known as the "direct method." But another method is much advocated by many prominent practitioners, which is known as the "indirect method." This involves taking an impression of the cavity in an impression wax and from this making a replica of the original cavity (sometimes called a mold, or die) in which to form the wax pattern. This replica is made of various materials, such as cement, one of the quick-setting silver-tin amalgams, or copper amalgam.

For the indirect method many advantages are claimed, the more valid of which are as follows:

First, if a casting is spoiled another may be made without recalling the patient. This can only appeal to those using unreliable machines, or materials, or inconstant methods. As has already been explained, with a proper machine and a definite technique constantly followed, failure is absolutely not necessary.

Second, greater facility in carving the pattern to proper form. This is largely a matter of personal preference. Many who use the direct method claim greater satisfaction in carving in the mouth with the adjacent natural teeth as a guide.

Third, greater perfection of adaptation at the margins, especially at the cervical margin, and more particularly so when this margin is



below the gum tissue. In reply, the direct method men declare that if a perfect impression of all the margins can be obtained with the impression wax, it can likewise be obtained with the pattern wax, and that a better marginal fit will be had if this original first impression be utilized for making the pattern.

Other advantages are claimed for the indirect method, and disputed by the direct method men, but probably the only real advantage, if indeed this be one, is that the indirect method permits the operator to relegate a larger share of the work to an assistant. By this means he need only to take an impression of his cavity, give this to his assistant and at a subsequent sitting receive the inlay ready to cement to place.

There is no doubt that beautiful work is done by men of both schools, and whilst your reporter believes that the expert with the direct method will always make a better inlay than the man equally expert with the indirect method, he is not at all sure that the percentage of dentists per thousand who could accomplish satisfactory results may not be greater with the indirect method than with the direct.

Against the indirect method it must be said that if the operator himself should do all the work he must lose a great deal of time, for manifestly all the time expended in investing the impression and making the replica is time added to the process.

It would be extremely interesting and instructive to have the question of the adaptation of inlays made by the indirect method scientifically tested. It is the firm belief of your reporter that inlays made by the indirect method are smaller than would be an accurate pattern made in the original cavity. This explains the ease with which the majority of inlays made in this manner may be set, and the difficulties met with in complicated forms, such as those for M.O.D. (Mesial-occlusal-distal) cavities. This also explains why so many advocate that the M.O.D. cavity should be filled with two inlays, interlocking together, whereas the workers by the direct method make a single inlay for this style of cavity.

Your reporter does not consider that cavity **Cavity Margins.** - preparation is strictly a part of the subject apportioned to him, but he would like briefly to touch upon a single aspect thereof, because of a feature which is not widely known.

There has been much contention as to whether the cavity should be prepared with a bevelled margin or as for a butt joint. Those who favor the bevelled margin declare that the arrangement of the enamel rods demands that a bevel equal to at least one-third of the length of the rod is essential to future safety. Those who like the butt joint demand that the margins of both enamel and inlay should be as nearly as possible

at a right angle, and they argue that this arrangement leaves the enamel rods strong, because the enamel rod usually lies at a right angle with the tooth surface. They point out that whereas the bevel may be necessary with the gold foil filling, where the foil is malleted against the actual margins of the enamel rods, such is not the case with the inlay, and the bevelling only makes a weak margin of gold, which later will turn away and expose a seam for the inroads of new caries.

There is, however, another method of fashioning the margin which is worthy of consideration. So far as your reporter has been able to learn, this method is original with Dr. M. L. Rhein, of New York, and has been adopted by only a few others. Yet your reporter has seen such beautiful results with this method that it seems important that it should be reported.

This arrangement must be called the "lapped joint." In treating the approximal surfaces, to which it especially applies, a chisel or disk is used between the teeth and the margins of the cavity trimmed away to a flat plane, and the trimming is extended until the entire bell shape form of the tooth has been removed. This yields considerable approximal space, and facilitates the taking of the impression of the cavity. It leaves the approximal margin flat, with the lingual and buccal margins in the same plane, which plane is slightly inclined away from the gum toward the occlusal surface. For fear that I have not made this entirely clear (which is difficult without models), let me further state that if we examine these flat approximal margins we will note that they are comparatively wide, with one angle formed by the surface of the margin and the buccal enamel surface, and a second angle formed by the surface of the cavity margin and the dentinal surface of the cavity. It is the extension of the inlay over this flat margin which accounts for the term "lapped joint."

This style of margin may be utilized with the direct method, but it is more readily used with the indirect, for the reason that the extreme buccal and lingual edges of the gold which makes the lap is brought to a very sharp edge, which is easily injured in removal from the mouth. Using the indirect method, the pattern wax is extended over the margins considerably, and this excess is polished off after making the cast, the polishing being carefully done with the gold inlay returned to the metal replica of the tooth.

A very large number of prominent men, whose opinions must be treated with respect, have concluded that pure gold when cast is not sufficiently hard for filling teeth. To obtain a harder metal various alloys are used, probably the best being pure gold alloyed with from 2 to 5 or even 6 per cent. of platinum.



In spite of the great number of men who have abandoned pure gold, and with all due respect to the opinions of my prominent confrères, your reporter is compelled by personal experience to proclaim his allegiance to pure gold, and he is solaced by the fact that he is still sustained in this opinion by the inventor of the method.

After using pure gold for about a year, your reporter observed some of the marring of occlusal surfaces and other troubles complained of by his confrères, and following their lead he used gold alloyed with platinum for about another year, and came to the conclusion that the greater difficulties in obtaining accurate adaptation more than offset the advantages of a harder surface. There is no doubt that pure gold can be more accurately cast than any alloy thereof, and consequently it should be some very pronounced advantages which would tempt us to forsake that metal.

Your reporter therefore abandoned the alloys and returned to the use of pure gold. By this time also he was partially awakened to the necessity of more accurately reproducing the occlusal forms of teeth, but later still he became fully aroused on this subject by the several communications of Dr. J. Lowe Young, and at the present time he unhesitatingly asserts that, if anything like accuracy is attained in reproducing tooth form and occlusion with the gold inlay, pure gold is the best metal with which to serve the patient, and that under these conditions it will be found quite hard enough to withstand all natural masticatory stresses. In other words it was the malformation and malocclusion of the early inlays rather than the supposed softness of the metal which occasioned the damages reported, which included everything from bruised surfaces of the gold to the splitting off of sections of tooth tissue.

Occlusion. We come now to the most important feature of the entire gold inlay proposition. The natural teeth were given us for the mastication of food. They were undoubtedly made of a special design that they might adequately accomplish this function. In proportion as mastication is thoroughly well effected is the individual well or ill. Hence we may declare without opportunity for dissension that the health of a man is to a great degree dependent upon the occlusal form of his teeth, since upon this form must depend the efficiency of these organs in mastication.

In the past the occlusal form of molars and bicuspids have rarely been copied even in the crudest manner, with gold foil filling. Nor is it very practical to do this, carving the dense hard gold after it has been placed in the tooth. But with the gold inlay process, using as we do a plastic wax for forming the original pattern, the carving and reproduction of the actual tooth surface is only limited by the skill of the operator.

# Items of Interest

This subject is of too great a magnitude to be thoroughly treated in a report of this character. Let me only say that a great awakening to the opportunities is even now occurring in the United States. Several enthusiasts are giving their time visiting dental societies throughout the country, explaining and exploiting the new doctrine. Already the spread of the movement is evidenced by an improved teaching in the schools.

Protection of Interproximal Soft Cissues.

I would be derelict, however, if I did not point out the most important feature of this most important new technique. It was long ago taught and later definitely proven by Prof. G. V. Black that actual approximal contact of the teeth is essential to the health of the

interproximal tissue, and this is as true to-day as when the dogma was first promulgated. But in the light of the newer teaching we discover why it has been so often, in spite of accurate approximal contact, the gingival tissues have suffered, gingivitis has ensued, and too frequently septal abscesses have formed. We have wondered how food could have been forced between teeth so close together that it appeared difficult to pass a silk thread between the classically formed contact points.

This mystery is a mystery no longer. Normally teeth are movable in their sockets, and no contact of adjacent teeth will alone prevent the ingress of food where the masticatory stress of the individual is above the average.

A study of the dental organs in a state of health discloses the fact that one cusp of a molar tooth is received by the fossa of its antagonist in the opposite jaw, while the other antagonizes with a fossa formed by the inclined planes of two opposing teeth. In the first instance we find that the summit of the cusp, as it reaches the bottom of the fossa of its antagonist, is met by a cross sulcus leading lingually and buccally, so that the food crushed at this point is forced in the direction of this sulcus. Where the cusp antagonizes two teeth we find each of these opposing teeth protected by a marginal ridge. This marginal ridge has its inclined plane leading toward the centre of the tooth and consequently away from the interproximal space. Moreover, at the extreme depth of this incline we find a crescentic groove or sulcus, the horns of which pass outward and inward, buccally and lingually, so that food crushed at this point is forcibly ejected away from rather than toward or into the interproximal space.

Your reporter is quite ready to admit that this condition is not prominently present in all teeth nor in all types of teeth. But by a study of the best type of teeth shall we learn the protective intention of Nature in this provision. So important does this point seem to your reporter that he makes an earnest appeal, not only for the restoration of the



occlusal surfaces of molars and bicuspids, in as exact accordance with nature as possible, but he would urge that the mesial and distal marginal ridges, with their inclined planes and crescentic sulci, be accentuated even to a greater degree than they may exist in other dental members of the same mouth. When we consider that the tooth is already in a state of disease, we cannot take too many precautions to protect it from a new attack.

It is your reporter's belief that much gingival disease has been inaugurated by flat fillings, which have had a tendency to force food into rather than away from the interproximal spaces. Such fillings, while they may have saved the teeth, have injured the tissues of the mouth by packing food against the soft tissues, and have injured distant organs of the body by burdening them with an excessive share of the processes of digestion. All these troubles may be avoided and the patient's masticating apparatus may be perfectly restored if we conscientiously utilize the opportunities afforded us by the cast gold inlay process.

Inlays for Difficult Positions.

In conclusion let me describe three types of inlays which have been formulated for positions of special difficulty.

First picture to your mind a distal approximal cavity in a molar, complicated by the presence of a cavity at the buccal aspect, near the gum. The tooth substance between the two cavities may be so poor that a thorough excavation would make the two cavities continuous. This is a condition in which it is manifest that a single inlay cannot be used. The procedure is as follows: An inlay is first made for the buccal cavity and is finished and set so that one edge of it becomes a part of the margin of the approximal cavity. A second inlay is made for the approximal cavity, and when set completes the operation. If well done it will seem to be but one inlay.

In the so-called M.O.D. cavities it is common practice to fashion an inlay for the distal and half of the occlusal part of the cavity, cutting a box or dove-tail in the occlusal extension. This is set and a second inlay is made for the mesial portion of the cavity, interlocking with the first inlay when set. As has been already stated, this procedure is seldom requisite when the M.O.D. cavity presents at the outset, but it is an important technique when a cavity appears in the approximal part of a tooth which already carries an inlay in the other approximal surface, seated and anchored in the occlusal surface. In such cases an interlocking of the two inlays assures permanency of both.

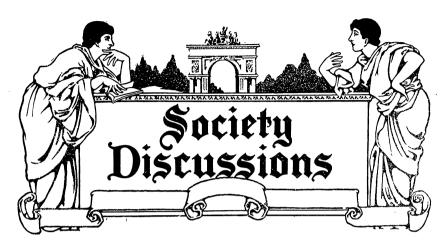
With the first introduction of the gold inlay attempts were made to produce an inlay which would have its conspicuous surface covered with porcelain. Many methods were tried, but none has seemed so satisfactory



as a method recently shown and now much utilized in the United States. This method even permits the use of a gold inlay in the anterior teeth. The procedure is to make a gold inlay of such form that all that part where strength is required shall be of gold. Such part as would be easily seen is cut away from the wax pattern and a box formed, one edge of which shall be the margin of the tooth, the box, of course, only appearing as a box when the inlay is set. After setting the inlay this box is filled with a silicate cement to match the tooth. Such combination inlays having been made, it was discovered that the beautiful transparency of the cement was lost by having the gold back of the filling, but in the more recent inlays of this character this fault has been largely overcome by cutting windows completely through the gold. These windows afford a better hold for the cement, and by permitting the passage of light restore the translucency.

Respectfully submitted.





# Central Dental Association of Northern New Jersey Discussion of Dr. Corwin's Paper.

Edward Ø. Kirk, D.D.S., Sc.D., Philadelphia. Mr. President and Gentlemen of the C. D. A.: I feel very much embarrassed by the handicap the President has placed upon me, I am afraid it is going to be something like the mountain laboring and bringing forth a mouse. I want to say, how-

ever, and I am sure this expresses your own thoughts, those of you who will not have the opportunity to speak, that I feel that I owe a debt of gratitude to the essayist, not only for bringing to our attention this very important question but for the very comprehensive way in which he has treated the subject.

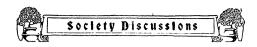
We, all of us, know or we will find from experience, and a very unpleasant experience, what a very important thing this question of fetid breath is. Leaving out all questions of pathology and the tremendous handicap that it is to the individuals who are cursed with a fetid breath so often without their own knowledge—we know what suffering they inflict upon others with whom they come in contact. I think we can all recall to mind individuals, attractive or important in various ways, that it is really an unpleasant, not to say disagreeable, experience to meet because of the exhalations that emanate from their bodies, and particularly from the mouth cavity. So leaving out all questions of pathology

it is an act of mercy to take up the study of this matter carefully and scientifically to see what can be done for the relief of the conditions.

A very prominent gentleman, a man who would be known to probably all of this company if I should mention his name, was a patient of mine for many years—a delightful character, a man of international reputation; I considered his visits to my office red letter days, and he used to say to me: "Now, boy"-I was a boy then-"there is one thing I want you to promise me, and that is that you will be sufficiently my friend, to tell me when I have a bad breath." He said: "There are so many old men, men who as they grow old develop offensive breaths, and I want to be preserved from that, or if I cannot be preserved from it, I at least want to know when it happens, and you are the only one I know who can tell me about it." Fortunately for him, and his sensitive feeling about the matter, he never did develop a bad breath; but it is true we are constantly meeting cases of that sort, and I have always felt that something ought to be done for them, and, within the limits of my practice I have done all that I could for them and given some attention to the matter from the standpoint of the mouth as related to a fetid breath.

I will report a little instance that occurred in my office that may be somewhat humorous, but I hope that it is not very humorous. A lady came to my office one time followed by a very beautiful, prize winning. setter dog, and I placed her in the chair and proceeded with the work that was necessary for her. I noticed this dog running around the room and after awhile he began to rub his head on the carpet and roll around on the floor just as dogs will do when they run across carrion or putrid flesh. You all know how attractive putrifying flesh seems to be to a dog, and he was rolling on the floor in this characteristic way and I wondered what on earth he could have found in my office to develop that characteristic. I was so curious about it that I went and examined the place and there I found a tooth on the floor. An hour or two previously I had extracted a number of very loose pyorrheal teeth from a patient and one of them had fallen on the floor, and this dog had discovered it and detected the odor of putrifaction, and it brought about that peculiar conduct on the part of the dog. He discovered that was a case of putrifying tissue and it appealed to his epicurian sense and he expressed his pleasure over the discovery by this very characteristic conduct.

The odor of putrifaction we know develops in the case of necrotic destruction of the tissues about a tooth, certainly in those cases that we speak of as pyorrheal. That is one of the very common sources of fetor of the breath. We find that condition, not only in pyorrhea, but we find it in mechanical dentistry too. A patient walked into my office many years ago and he said: "I want to show you a piece of work I have in



my mouth. It is the largest piece of work of the kind that has ever been done up-to-date in this country." And I said: "Well I can tell you what it is before you open your month." And he asked: "What is it?" And I replied: "It is a piece of crown and bridgework; I can smell it" (laughter). He said: "Do you mean that?" I said: "Yes, I smell it now." It was done by a very famous crown and bridgeworker who has since passed away—I mean of the advertising sort—one of the pioneers who had helped to introduce that method. The patient had an entire upper denture of bridgework and beneath this denture was a septic condition, a necrotic condition, affecting the tissues about the roots that were used for abutments and I could smell it within six feet before he told me about it. So those are sources of breath contamination, distinctly within our own control.

We hear a great deal about mouth hygiene and we hear that "A clean tooth will not decay." A great deal of the mouth hygiene we hear about and which is exploited, is not mouth hygiene at all, it is tooth hygiene. That is to say it is carried out on the principal expressed in the axiom. "A clean tooth will not decay," and we clean the teeth and after we have gotten them clean we stop. But that is only tooth hygiene; there are other things there besides teeth. There is the mouth and its contents.

One of the sources of breath contamination that is a very potent and active source of it, is the putrifactive activity that takes place upon the dorsom of the tongue simply from an unclean tongue—the accumulation we so frequently see on the floor of the tongue, especially towards the back of the tongue. I gave a lecture on mouth hygiene not long ago. I preached the gospel of oral cleanliness and mentioned incidently the contamination of the breath that came from an unclean mouth, and an old quaker lady, when the meeting was over, came to me and said she didn't feel quite sure that this breath contamination I talked about had so much to do with the mouth, that it frequently came from the stomach. and she said she had seen her doctor about that, and he told her that it came from her stomach. I looked at her mouth and it was filthy. I had to hold my breath while I looked at it, and I said: "You go back to your doctor and tell him you have had this disagreement with me and tell him I think it is possible, indeed highly probable, that your stomach trouble is the result of your mouth contamination, that your mouth contamination does not result from your stomach trouble." She said: "I had not thought of that." I said: "That is worth thinking about for with your infected mouth you are constantly swallowing untold myriads of bacteria and putting your stomach out of order by swallowing the in-

# Ttems of Interest

fected food passing through that cavity, so that you have the cart before the horse somewhat?"

I do not think it is necessary nor worth while for me to go over the instances that occur in our own work which corroborate the statements of the essayist with reference to diseases of the sinuses and the nasal cavity, the tonsils, etc., that we see from time to time. That I think we fully appreciate and much of it, indeed all of it now, we refer to specialists in those departments for treatment.

We have all seen those cases and know about them.

Care of the Conque. One of the points about tongue infection that I did not fully elaborate, and that I want to speak about is this: in our normaly or ordinarily cleanly mouths, in the mouths of healthy people, in those

whom I have spoken about as being given to the cleansing of the teeth, these people are liable to have a contaminated breath from that source, so that my own practice and teaching in reference to those who are dependent upon me for advice and those who come to me for instruction in that connection is that not only should the teeth be cleansed, but that the dorsum of the tongue itself should also be thoroughly cleansed before retiring at night. Some individuals have a habit or a tendency to sleep upon the back and in that position the mouth is likely to be open; many people who snore do so with their mouths open. I have heard it said that is impossible, but I have sat up and watched it; so I know it is possible (laughter). With the open mouth, breathing through the open mouth, and with these accumulations upon the dorsum and the tongue and with the salivary secretions for the time being arrested, putrifactive changes take place in the accumulations on the back of the dorsum of the tongue and the patient wakes in the morning with a disagreeable taste in the mouth and certainly a disagreeable breath. I have seen that occur in individuals who were perfect specimens of healththat peculiar putrifactive taint of heaviness of the breath that is noticeable in many instances where you find these accumulations in the back of the tongue where the secretions are more or less arrested at night and where the washing of the tongue by the salivary fluid does not take place.

With regard to the cleansing of the tongue, it should be done mechanically with a brush or with a tongue scraper; and I want to add my word of approval to the suggestion the essayist made with reference to the use of hydrogen dioxide for that particular purpose. My own practice which I recommend and use personally in my own family is to use a preparation of about twenty-five per cent. of hydrogen dioxide and seventy-five per cent. of lime water. The lime water neutralizes the



slight acidity of the commercial preparation of hydrogen dioxide and we have in the limewater the alkalinity that acts as a solvent to the mucous which helps to hold those secretions on the surface of the teeth, of the dorsum and of the tongue.

I was particularly interested in the classification given by the essayist in regard to his comments on the source of breath contamination and also his comments on the chemical aspects of the question.

We have learned by long experience to avoid those things which have certain kinds of odors as being harmful or offensive to us, just as when we detect a certain odor on the country highway at night and diagnose it as a skunk we give it a pretty wide berth; and the same principal applies to those things which experience has shown us to be harmful. and that is the basis of our attitude toward the question of odors, as to whether they are agreeable or disagreeable largely. So we are liable to avoid those odors which are characteristic of putrifaction because we know such things are harmful to us. Speaking from experience I had a case which taught me a great lesson. I went over to our bacteriological laboratory one morning to consult the director there, Dr. Abbott; he was quite busy and I wandered into the chemical storeroom adjoining his office and looked over the chemicals, because I was interested in the collection and in a little bottle holding about a gram and which was labled "Katol." I became rather interested, for I had run across Katol in a very dilute form and knew something of its origin and I thought I would like to see what real Katol smelled like. I am not exaggerating when I tell you that when I took the stopper out of that small bottle— (I was raised in a chemical laboratory, and I learned long ago not to stick a bottle under my nose) after the technique of the chemist, and got it in a milder form—pardon me when I tell you that if a putrified corpse struck me a blow in the face, I could not have had a more painful sensation. It was a peculiar thing, it has the effect of a solid blow; the sensation was so intense that I felt as though I had been struck in the face. So that, Sir, concerning the discourse you have given on the density of certain smells, this must have been the densest one of all.

I have spoken in a very desultory way because I know nothing at all about the subject, but I again wish to express my gratitude to the essayist and my appreciation of Dr. Kussy's very kind introduction and to Dr. Waldron who sent me a stand and deliver order to be here tonight (applause).

Benry Clay Ferris,

I must confess I am very much overawed by your President's complimentary introduction, and D.D.S., of New York. feel that he has made my task the greater by causing you to expect too much of me in this discussion.

# Items of Interest

Had I the ability to express myself in the beautiful language that flows so easily from Dean Kirk's mouth, I might feel a great deal more at ease, but I will try to give you some of my personal experiences in an effort to discuss Dr. Corwin's interesting paper which contains so many fine points that it is difficult to know where to begin.

He first refers to normal breath. The expired breath is nitrogen and oxygen, the proportion of the latter less than that present in the atmosphere, 4.78 volume per cent. of carbonic acid, aqueous vapor of ammonia and organic impurities. The external cold increases the intake of oxygen and the discharge of CO<sub>2</sub> while a rise of external temperature, is followed by a diminution of both. Muscular exercise acts like cold. Food produces the same result. Fasting lowers it. In the case of "Ceth" the fasting man, the absorption of oxygen and the discharge of CO<sub>2</sub> per kilo of body weight, fell rapidly. Before it was seventy-three per cent., and on the third day it was sixty-five per cent. Vegetable food raises the respiratory quota to nearly unity while flesh diet is about seventy-two per cent., and on mixed diet somewhat higher.

Among the curiosities of literature, there are reported cases of luminous or bright red breath and others of inflammable breath in which there was a flash from holding a lighted match near the mouth.

In health the breath is nearly odorless, but a sweet odor from certain glands in the mucocutaneous junction of the nostrils is emitted, and nature has designed this as a sexual attraction and with other attractions between the sexes it helps to insure reproduction of the species\*

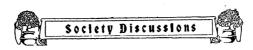
Every person is characterized by his own odor and the more refined he is, the higher in the scale of civilization, the more delicate the odor. On the other hand, negroes emit a musty odor probably due to the formation of combustible carborated hydrogen from chemical decomposition of the breath.‡

In uremia the breath acquires ammoniacal odors due to the non-elimination of the urea which persists in the blood and combines with water to form carbonate of ammonia. The skin also exhales the same odor.

Various mineral substances which are introduced into the system and are odorless, produce odors of the breath during some periods. This occurs in stomatitis and some other disturbances of the digestion due to chronic poisoning. Substances concerned in the production of toxic halitosis and antimony, arsenic, lead, mercury, phosphorus and sulphur. Sulphur imparts a distinct odor, after two hours, to the breath and perspiration. Those not in good condition for reproduction or lacking in

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<sup>\*</sup>Emma E. Walker's Reference Handbook of Medical Science Vol.II ‡Green's Encyclopedia



passion, possess slight nasal odors. It has been stated to be absent or disagreeable in pregnant women. In diabetes the breath has a sweetish odor likened to honey, sweet apples or hay. Sulphurated hydrogen is found in the stomach and intestines and excreted through the lungs.

I would next take up the classification the essayist has used, and in my review of the literature there was none so comprehensive. I would like to suggest that he include that of particular interest to our fieldthe odors of secretions of the oral cavity. The normal production of saliva being forty-eight ounces in twenty-four hours or about fifteen hundred cubic centimeters is not considered by any of the writers nor has it been touched in this essay. It is my experience that in all cases given in his first class, those exhaled from the blood and resultant from pathological conditions in the alimentary canal are distinguished in the specimens of saliva collected from the different patients. I have not collected saliva with the use of a catheter or any mechanical device and am unable to state that these odors were not produced partially by the accumulation of gases passing over them while in the oral cavity, but I am of the opinion that they play a very small part in the estimation of the odors that are emitted from the salivary specimen. These odors are characteristic of lesions in the alimentary canal and are associated in differential degrees in diabetes, nephritis, and obstructions of the alimentary canal. In the nerve diseases they surpass all other odors that we find in putrefactive cases. In insane asylums the odor is peculiarly obnoxious, and while they scrub these patients with soap twice a week and the water runs away polluted, they remain sweet but a very short time

Some of these cases have been treated through salivary analysis by Dr. Bernard R. LeRoy, of Athens, Ohio. Where the sulpho cyanate of potassium was absent in the saliva, he administered this drug in the form of sulpho cyanate of sodium, and claims to have reduced the odor materially by this treatment. His explanation of the physiological action of the drug is that it influences the metabolism of the tissue cells, stimulating them to normal function and retention of the carbonates.

To go back to the dental side of this subject, let me introduce some of my methods as an orthodontist in that direction. We find that these pathological lesions which occur in the intestinal tract are controlled to a large extent by a proper consideration of mastication in normal occlusion of the teeth, that is after the normal occlusion of the teeth has been accomplished. It is my practice in all cases of malocclusion, in estimating the value of the organ from the tooth standpoint, to reduce the organ to a masticating machine, counting the number of inclined planes of the teeth in occlusion, and in proportion to the number of teeth in

occlusion, or to the number of inclined planes taking the normal as one hundred and thirty-four, so we will find a betterment in the hygienic conditions of that oral cavity regardless of the cleansing or hygienic methods that the patients may carry out in their daily routine.

I have had the pleasure of working out a correction of chronic constipation after two years work and a year of tests, and of curing the patient where medication failed to be of any service. I scientifically reported this case in *Dental Cosmos* a couple of months ago and I con sider it one of the best illustrations of the value of normal occlusion and its effect upon the whole alimentary canal. The patient's bowels have been regular for the past year, and that has been accomplished by bringing the number of inclined planes in occlusion up to eighty-five from twenty-two, and those inclined planes after an orthodontic operation were re-established at the hands of a dentist in building up by cast gold inlays, with careful consideration of the normal form of each tooth.

As far as medication is concerned, it is my observation that the best men in New York are treating their cases from the standpoint of dietetics. Anti-

septics are being relegated to the background. They are analyzing their subjects, particularly the wealthy classes who can pay for these analyses, and in the hospitals they ically treating their patients through dietetics. I have had the pleasure to save six youngsters under four years of age after four had died, one with the superior maxilla and part of the nasal bone necrotic and the face practically eaten away. I saved the six in this simple manner. received them with a temperature of one hundred and three and onehalf, and an eruption all around the mouth and nose, and simply treated them with a normal salt solution locally and lime water such as Prof. Kirk has referred to. I find that in my practice almost a panacea. It dissolves the mucine and albumen in the mouth as nothing else will, that I have been able to find either actually applied or in experimental work in the laboratory. I gave these children inch-squares of dried bread with no butter. The bread which they at first refused, was left within their reach. The teeth were all evacuating pus and blood and were so loose they were bobbing around in their little heads. The head nurse said she did not believe the children would use this dried bread, but I told her to stick right to it, and to hand the children a piece of bread every time they cried, which she did, and they started to nibble at it, and after a while they would eat as much as half of a piece, and in the course of a few days I got them up to two or three pieces of this bread, thereby increasing the flow of saliva, the carbon hydrate food coming into their



mouths in a state which would absorb the saliva and give the largest amount of digestion, also stimulating by reflex, the gastric and pancreatic secretions. The loose teeth began to be firm in the mouth, the pus disappeared, and after three weeks we discharged those children cured. I consider that particular experience one very potent to all dentists, and the same principle can be used in a little higher grade of disease. It illustrates a principle in the general practice of medicine as well as in the practice of dentistry. You will find that in most of your cases of fetid breaths, you can accomplish some results—you can work your bread! You can also work a little rubber block and make a patient with a sore tooth exercise that tooth with the rubber block, and in that way you will stimulate and increase the flow of salivary secretions, which is Nature's antiseptic, and according to the principle expressed by our essayist.

The subject is so full that I wish I could go on, but fear that I am boring you somewhat. The thought is one that we should follow out and give a good deal more attention to in our daily practice, and I wish to thank the essayist for directing my attention to the subject.

Dr. James Spencer Brown. There is one angle of this discussion that has not been touched upon and which comes under the work of a surgeon and may be of a little interest to you in the classification which Dr. Corwin gave of

odors arising from systemic affections. The odor of the breath, of course, is the end result just as gall stones and ulcers of the stomach are the end result of some changes in the body metabolism and in speaking of these systemic affections, intestinal stasis, I believe, plays a most important part. The newest thing in medicine to-day is *intestinal stasis*. Physicians have treated it for half a century with absolutely no results, and now the surgeons are taking a hand at it. Do you know that if you cut off the intestine about twenty inches from the stomach the patient will grow fat—in fact you do not need all your guts, you merely have them by the mercy of God.

Sir Arburthnot Lane, of Guy's Hospital, London, several years ago. began to study the effects of intestinal stasis. You know that Metchinkoff and his followers attributed all absorption of toxins to the large intestine and now Lane seems to have proved that the colon plays a very little part. He has in numerous operations proved that in almost all of these cases of intestinal stasis where the fetor of the breath is the end result, cases are cured by short circuiting the illium into the sigmoid flexure of the colon. Insane people who have been spoken about all stink because they have intestinal stasis; their skin and breath smell bad, they are



obnoxious. As a rule those who suffer from intestinal stasis suffer from it through mechanical causes. This is proven—it is not a question of theory. Anyone who will take the trouble to do enough belly operations will see that it is so.

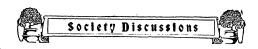
We have done much of this work in recent years and it would be surprising to some of you gentlemen to see people that have gone through the hands of different men looking for a tag to attach to them in the way of a diagnosis. Of course, they must have some kind of a tag attached to them in the way of a diagnosis, and most of them have "Neuresthenia"; that seems to be the sin that besets them more than anything else and it means "We don't know what's the matter." (Laughter.)

Some of these neuresthenics suffer from toxemia from intestinal stasis; after they are short-circuited they grow fat and well and healthy and become useful members of society and do not have any more neuresthenia.

It is a very interesting phase that has swept over the medical profession. As you know Sir Arburthnot Lane was the first man to introduce salt solution into the veins, which was fought by the Royal College of Surgeons in England, and opposed so vigorously by the Society of Physiologists of England because they said it always killed the animals; still he continued to put it into human beings, until now, in cases of shock, if you did not introduce it you would likely be charged with being guilty of malpractice. This same man called attention to the fact that most deformities in the fractures were caused by the bad setting of bones, and until we had the X-Ray to show that it was so, he was again fought by the whole profession in England, and now I suppose it is one of the most common propositions put up to the surgeons-I am sure it is with me—this plating of fractures of the long bones.

The latest thing that he has proposed is the surgical treatment of intestinal stasis. About five years ago he commenced to short-circuit people and take out their colons and the profession thought he was crazy. Last month he was at the Chicago Convention of Surgeons, and when he came on to New York Dr. Bainbridge gave him a dinner party at the St. Regis—I am telling this as a matter of history and you probably will be advised about it in a few weeks. The dinner lasted until half past ten and then some two hundred and fifty surgeons stayed there until half past one or two o'clock fighting this matter out with him and he won

I believe the day is coming when these cases of fetid breath—which is just the end result and not necessarily a disease—will be treated by surgeons and they will be cured just as we cure appendicitis, for it is



not a difficult operation nor fraught with much danger. Out of at least one hundred and sixty cases operated upon in England there were three deaths, two from sepsis and one from pulmonary embolism.

This is the angle that I desired to speak about. I am very much obliged to Dr. Corwin and to Dr. Ferris and to your President for allowing me to speak. Thank you.

In closing the discussion.) I am very glad I came to this meeting. The discussion has developed a great many aspects of the case beyond those I presented this evening, and in which I was profoundly interested, and I beg to thank the gentlemen who so kindly discussed—or I should say—who have added to the paper. I certainly cannot say a word to add to the emphasis which they have given to the aspects of the case they have so magnificently presented.

I was especially interested in the remarks Dr. Ferris made from the standpoint of the orthodontist. I have had much pleasure in following up some of the discoveries and advances made along the lines of orthodontia and I do not know that the influence of orthodontia upon such apparently remote conditions as constipation has ever been brought to my notice before.

I am sorry that the paper is defective in a great many respects; I have not considered very much the oral causes of bad breath, knowing that would appeal immediately to you, and you would doubtless investigate it with a great deal of care. In fact I have not at all perused the dental literature in gathering material for this paper. I thank you gentlemen most heartily and assure you the discussion has been of much profit to me.

On motion a vote of thanks was extended to the essayist for his very excellent paper and to the gentlemen who had so ably discussed the same.

On motion, adjourned.





# Wholesale Extraction of First Permanent Molars Recommended to the New York State Department of Bealth.

The propaganda of mouth hygene has reached that satisfactory stage where the dental profession is receiving hearty co-operation from the medical profession, from school boards and from health boards. importance of proper inspection and proper care of the teeth of school children has reached that period of recognition where dentists have been emboldened to suggest that boards of health might well include one dental member, and such appointments have been made in a few notable instances. It will therefore be with some chagrin that the profession will learn that such a letter as we publish herewith could have been addressed to Dr. Herman M. Biggs, State Commissioner of Health for New York. Fortunately, Dr. Biggs is too well informed to have acepted the advice as sound. However, he thought it well to send copies of the letter to a prominent mouth hygienist of this state for his opinion and for the opinions of others. In this manner it reached the editor, and permission to publish has been obtained from the Department of Health, that the subject may be even more widely discussed should it seem worth while. The writer of the letter in question is unknown to us, and consequently its publication is entirely without bias.

Letter to D. Y. State Commissioner of Realth. "There is one thing I would like to mention to you in regard to the health of children in the public schools, and that is, the advisability of removing the sixth year molars.

"About 95 per cent. of all children are better



off without these teeth. This conclusion is reached after having practiced dentistry for thirty-eight years, and after having removed these molars for at least 15,000 children in private practice with the late Dr. Ferdinand Hasbrouck, of New York City, for whom I was operator for seven years. This practice produces wonderful results and should usually be done between the ages of ten and fourteen; in the majority of cases at the age of twelve. I have always considered it one of the curses of childhood to allow these molars to remain in the mouth and cause so much crowding and irregularity and subsequent unavoidable decay.

"I have some beautiful examples of this practice right here in this town which I could show you at any time. Nature provides us with more teeth (also more lung) than we really need, and as the sixth year molars are usually no better than temporary teeth in quality, they fall an easy prey to the ravages of decay and filthiness in the mouth, and cause a great amount of pain and ill-health.

"If this practice could be carried out with the children requiring it in this State for the next ten years alone, twenty-five per cent. of the present number of dentists now practicing in the State could easily attend to all of the necessary dental operations twenty years from now, and the health of the patients would be far superior.

"As a letter is a small space to say much on such an important subject, I simply submit this as a hint to some of the future dental inspection work in the schools. In a personal interview I could remind you of many important steps to be insisted upon in this matter.

"Respectfully submitted,

A Digest of the Extraordinary Statement. This unknown writer declares that he has had thirty-eight years of experience during which time he has extracted the sixth year molars for at least fifteen thousand children. That means that for thirty-eight years this gentleman has extracted the

sixth year molars from about four hundred children annually, or about two children a day for two hundred work days of each year. It also means that he has extracted sixty thousand first permanent molars from the mouths of children because in his opinion "ninety-five per cent. of children are better off without them."



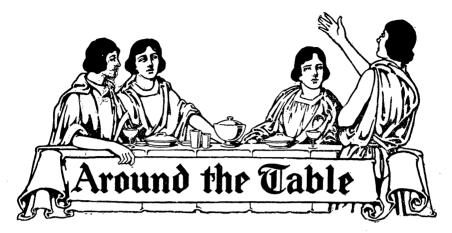
He states that he considers it "one of the curses of childhood to allow these molars to remain in the mouth and cause so much crowding and irregularity." What will Angle, and Case and Jackson think of this? Here is a somewhat new factor in the etiology of malocclusion, and a short road to its correction.

He likewise announces that these teeth are "little better than temporary teeth in quality and fall an easy prey to the ravages of decay." What will Prof. Black think of that?

Most interesting of all, the gentleman declares that he has some beautiful examples of the practice which he could show. Surely after such extensive experience with this advocated practice he certainly should have cases to exhibit, and since he has expressed a willingness to show these cases to the Health Commissioner, he should be equally willing to submit his evidence to the dental profession. And since he prophesies that if his suggestion were carried into effect the number of dentists needed in the community could be lessened by seventy-five per cent., his proposal is rife with such tremendous results that we all would be interested in his arguments.

He is therefore cordially invited to prepare for publication in ITEMS OF INTEREST a full statement of his theories with evidence to substantiate his claims.





IN THE LAST NUMBER, my friend from Kentucky asked a question, which

- \* is here repeated that the topic may be fairly before us. "We have had
- \* articles," said he, "on office management, efficiency, and business talks.
- \* But what has been printed on various means of establishing a practice?
- \* Why withhold such knowledge from the worthy young man, and leave
- him by bitter experience to get through and around the pitfalls that he
- is sure to encounter?"

## H H

THAT IS THE QUESTION, and I promised to answer it.

### H H

WHAT WOULD YOU think of a man who jumped into the sea, and then

- cried out: "Ho, there! Some one jump in and show me how to swim!"
- Would you not consider that he was a bit late in recalling that he who
- plunges overboard should have previously provided a means of survival
- \* when he found himself in deep water?

### **H** H

YET IT IS undoubtedly true that this is exactly the situation in which all

- too many young dentists find themselves immediately after graduation.
- . Daddy goes to a dentist and has some bridgework done, and when he
- sets a bill for \$12,576.75 he concludes that dentistry is a "paying busi-
- ness," and he sends Son to a dental college.

### H H H

AND WHEN SON ascends the white marble steps of the Dean's Palace and

- \* announces that he wants to matriculate, does that Dean ask the boy:
- "Have you any idea how you will get a practice after you get your
- sheepskin?" Yes he does-not! But if some day some Dean should ask
- such a question, what would Son say? He would admit that the ques-
- tion had never occurred to him, and that he did not know the answer.

### H H H

FACT IS business men's sons have no right to attend dental colleges at all.

- \* Dentistry is not a business, though, of course, a practice should be
- managed in a business-like manner. Time was when a medical man
- \* never sent out a bill, or if he did it was sent in blank; merely a gentle

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- hint, or reminder, and the G. P. (grateful patient) would straightway
- \* write out a nice little check and forward it to the Dear Doctor. This
- \* was called an honorarium. But after a time some patients abused this
- honorarium method of settlement with doctors, and the method began
- to grow unpopular-with the doctors.

- SO NOWADAYS doctors, and likewise dentists, send out bills, with the ser
  - vice fee written in plain figures, and really it is just as well as things
  - \* are, because so few would know what an honorarium is, any more than
  - a friend of mine who asked me if it was not a new idea to declare a
  - \* "natatorium," as so many countries have done during this war. But
  - . even so, while it is perfectly just, proper, and right to have fixed fees,
  - and to collect real money for services rendered, nevertheless dentistry
  - is not, or, at least, should not be looked upon as a "business."

THEREFORE A YOUNG man entering the profession should do so just as

- he would join a Masonic order; not because of what he might get out of
- it so much, as with the full intention of being an honor to the honor-
- \* able body with which he thus associates himself.

CONSEQUENTLY SINCE he elects to become a professional man, he should

- realize at the outset that he is in honor bound to abide by the rules of
- the fraternity, and that an infraction of these rules is more of a dis-
- grace to himself than to the brotherhood whose tenets he has promised
- to obey. Yet how often, at the very outset of his career does the young
- graduate take a step which is likely forever to ostracize him from the
- company of the best of his professional brothers, and all because in ad-
- ❖ vance he neglected to ask himself: "How shall I get into practice?"

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- A FEW YEARS AGO a young man came to me seeking a position. He
  - told me two things that were astounding, considered together. First
  - that he was a graduate of one of our best university schools. Second
  - \* that he had been employed for a year in one of the most notorious den-
  - tal parlors in the city. "Were you not taught in College," I asked, "that
  - \* the majority of these dental parlors are pernicious, and that no pro-
  - fessional man can be connected with them?" This he admitted, and then
  - \* I asked: "Why have you worked for such people, prostituting your pro-
  - states, fession, your Alma Mater, and yourself?" This galled him and with a
  - ❖ little heat he replied: "I had to live!" Like a flash I retorted: "I do not
  - admit that. You do not have to live, or, at least, not at the expense of •

  - dentistry. Men like you might better die than live."

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HARSH AS THAT may sound it is as sound as Gospel. Before a man enters

- \* an honorable profession, before he applies for and accepts that educa-
- \* tion which could not be transmitted to him but for the text books and
- teaching of truly professional men, he should study out the problem of
- \* how to use his professional education, in a professional manner.

OF COURSE, to the Son of a successful dentist there is no problem as to



entrance into practice. He will first assist and then succeed his father.

- To the Son of the business man who essays to become a dentist for ÷
- "what there is in it," I have no advice to give. To the young man who
- finds occupation in a dental office in some capacity, and finally, growing
- to like the work seeks the required education; or to any young man
- who, with his eyes open to the fact that a profession is no high road to ÷
- fortune, but who from natural predilections, wishes to be a professional
- man rather than a tradesman, -I cheerfully offer a few random thoughts.

AT THE VERY OUTSET let me say that the acceptance of the position of assistant with an older man is like a double-edged sword. advantages in such an alliance, but there are serious drawbacks. If the ••• older man is skilful, the younger man may learn much from him, but do not overlook the fact that the possession of a large practice does not necessarily attest either to practical ability nor professional attainments. ÷ There are "business men," even in the higher walks, masquerading as professional men, and I might add, masquerading as dentists. Men who \* are just natural born salesmen. Such men "sell" amalgam fillings under ÷ **.** the name of platinum, "which, as you know, is very expensive just at ••• present." They speak of the silicate cements as "the new seamless • porcelain fillings." And their gold fillings are seven-eighths oxy-phosphate to "protect the delicate pulp from thermal shock." In such offices pulps are "capped" so as "to preserve the vitality of the osseous structure of the tooth as long as possible," and fistulous openings from alveolar abscesses are "an advantage since they afford free drainage from the 4.

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gum boils."

BUT EVEN IN the offices of the best grade of dentists, offices in which the young man may undoubtedly learn much, there is a limit to the advantage of such association. Let the young graduate realize that finally \* he must establish a practice for himself; one in which the patients owe \* allegiance to him, and not to another man. His inexperience and lack \* of faith in his own judgment may hamper him at the outset if he embark alone, but if he have average or more than average ability the satisfaction of his patients will rapidly give him confidence, and from that moment he must be increasingly successful as a practice builder. Then why build for another man? I place the advisable limit of such an association at five years, and three might be safer.

IN FORMING an alliance, the most important clause in the contract should be to the effect that "at the end of the term of this contract the • party of the second part shall be at liberty to enter into practice for himself, and to work for any patient who may have been placed in his charge by the party of the first part, provided such patient may seek such service unsolicited, except that the party of the second part by mail to all such patients a card announcing that he has terminated his association and has removed to his new address."

SUCH AN AGREEMENT made in advance, would avoid much possible ill-



feeling, and prevent enmities such as have lasted through life. The older man will place a family in the care of his assistant; usually a family for \* whom he does not himself wish to work. This family from a purely ٠ business standpoint is the "property" of the older man. Being pleased \* with the young man's services a friend is recommended. This is the • nucleus of family No. 2. Also the "property" of the older man. But ••• if the young man continues to give satisfaction he will acquire family No. 3, and then No. 4, and then No. 5. All of these the older man would • \* consider as his because had he not placed family No. 1 in the care of \* his assistant he never would have seen nor heard of family No. 5. This • fact being true, argument is futile. On the other hand the young man declares that if his work had not been satisfactory to numerous intermediate patients the older man never would have seen nor heard of • family No. 5. Which is not entirely true, because the same result \* might have come about had the older man kept family No. 1 in his own personal care. However, this is sufficient to show how easily an estrangement and even an animosity may arise, which will harass for a lifetime.

CLEARLY IT WOULD be best to permit the patient to decide to which man he owes allegiance, and therefore the clause suggested, or its substance

- should be in all contracts between old and young dentists. Indeed it is
- of more real lasting importance than the salary.

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WHERE A YOUNG man begins as the associate of another, when he termi-

- nates his agreement he should have a nucleus of a practice, especially
- if he had reserved the right to receive patients himself on some terms
   agreeable to both parties. Let us now come to the young graduate who
- courageously opens an office on his own responsibility. Such a man
- should join the local dental society as promptly as possible, and to render
- this easier, the Society should remit part of the first year's dues to all
- \* who become members during the first year of practice.

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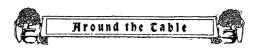
HAVING THUS proven his intention to practice ethically, he should, as far 

as possible, without unduly intruding himself, cultivate the friendship of 
the more prominent and successful men, though all professional friendships are of value. If there be one line of work in which the young

- man especially excels, let him exhibit such work to the older man. Ask
- permission to take a patient to the office of some man who may have
- shown some friendly interest, with the avowed intent of receiving
- criticism. In this way the older man will be enabled to see exactly what
- quality of workman the younger man may be. If pleased, he will prob-
- ably send him practice. These older men are constantly being asked by
   patients: "Can you recommend a young man who does good work? I
- patients: "Can you recommend a young man who does good work? I
   have a friend who cannot afford your fees?" How can the older man
- conscientiously recommend a younger man whose work he has never
- seen?

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THIS BRINGS US naturally to the question of fees. Let us for a moment consider what the business man, the shop-keeper would do. Before



- . even opening his doors would he not take account of stock, and esti-
- mate the price at which he must sell? It is even more necessary for
- the professional man to do this. There is nothing harder to accomplish
- than an increase in fees. Patients whom you serve well at the beginning
- of your practice, at fees below the value of your services will never leave
- you, and will expect you to adhere to the established fees sometimes
- throughout a lifetime. All old practitioners have "old families" of this
- class for whom it has long ceased to be profitable to work.

THE YOUNG PRACTITIONER should therefore determine the value at

- which he would be willing to serve his patient for at least ten years.
- ❖ It will be better to fix it a bit high rather than a bit low. He should
- endeavor from the very outset to avoid appearing so eager for patronage
- that he will work at any price. A reputation for cheapness spreads
- rapidly and is hard to overcome.

ALL PEOPLE are bargain hunters. From the very outset cultivate the habit

- ❖ of explaining that you are not a "cheap dentist." The patient will ask
- for some idea of your fees, and if acceptable you are at once obtaining
- ❖ a client who will pay you your full fee. Too many young men through
- \* timidity or lack of appreciation of their own ability present bills for
- less than the patients really expected to pay. Remember that in such
- cases the patient not only does not pay more than is asked, but he is
- apt to value your service at the lower price you put upon it.

I HAVE SAID that all people like a bargain. How may we take advantage

- ❖ of that, and accept a low fee without depreciating ourselves in the eyes
- of the patient? The answer to this is almost the most important advice ٠
- \* I have to give to the man entering practice. Let us suppose that he has
- decided that for the first ten years he should receive an average fee of
- six dollars per hour. To a new patient he should make this clear. If
- the patient doubts her ability to pay so much she will express this doubt
- ٠ and then ask: "Could you give me an idea as to what the work will
- ٠ cost?" The young dentist must then make this estimate, being sure that
- he is fair to himself. Let us say that he offers to do the work required
- for one hundred dollars. The patient is aghast, and says she cannot
- possibly pay more than fifty dollars. The dentist then may say: "I have
- given you a reasonable estimate. The fee is really lower than some of ٠ the older men would charge. Still, among professional men there is no ٠
- definite fee, and we do not feel like forcing a patient to go to some in-
- competent man for lack of money. Therefore I will make you an offer.
- I cannot reduce my fee, because it is fair. But you can pay me only
- fifty dollars in cash, and if you find my service satisfactory you may
- recommend me to your friends, and as soon as I do fifty dollars worth
- of work for some friend or friends of yours, I will give you a receipt in
- full for your bill. But, of course, this is a confidential arrangement."

THE PATIENT usually accepts; glad to get one hundred dollars worth for

- fifty. She also keeps the pact, not being anxious to advertise the fact
- that she is a half-pay patient. But what is of more importance she does



- not advertise that you are a half-price dentist. All people have acquaint-
- ances richer than themselves, and it will be among these richer friends
- that she will praise the dentist who has done her this kindness. In this
- manner the dentist establishes the proper fee for his first ten years,
- even though he may accept less than full fees from many. Better still,
- he will be building up a clientele that is richer and richer year by year.

THUS WE ARRIVE at another valuable bit of advice. Some day one of the

- Real Rich will arrive. At that moment opportunity knocks at the young
- man's door. If the rich person be a woman, as it probably will be, she
- must be cultivated. A dentist should endeavor to do his best for every
- patient, and to make all clients his friends. But for this particular
- woman of influence, he must do more than his best, and of her he must
- make more than a friend. He must not only give his best service at his
- topmost fees, but he must so treat the patient that she feels under ob-
- ligation. Without vaunting his own skill let him make it plain that he
- is of the newer school, and that he is endeavoring to give her the very
- best according to the latest discoveries.

A WOMAN FRIEND of this character is the most valuable asset that any

- practioner may have, and there is probably no successful dentist who
- \* will not admit that he has one or more women of this class, from whose
- friendship he has materially benefited. This being true the young den-
- tist should be ever on the lookout for her.

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ODDLY ENOUGH SHE may be brought to the young man's office by the

- humblest of his patients. Let me close by citing an instance from the
- experience of a professional friend, and let all young men take to heart
- the moral of the story.

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EARLY IN MY friend's career, when a dollar was worth one hundred cents

- to him, a stranger came in and asked to have a small buccal cavity in a
- lower molar filled with amalgam. He agreed to fill the cavity for two
- dollars. It transpired that the tooth was horribly sensitive and the
- patient a neurasthenic. The dentist used the utmost patience and his
- best skill, yet it required more than one hour to fill the tooth.
- patient then said: "Doctor, I think I ought to pay you more than two
- dollars?" But at the outset she had explained that she was a governess
- out of work, and could not afford a high fee. The dentist was tempted
- to charge more, but such a course was against his conscience, and he
- could not fail to abide by his own estimate. So he replied: "It did take
- more time than I had anticipated, but I cannot charge you any more."
- Then laughing he added: "Send me a millionaire patient some day, and
- I will charge the rest to her."

A YEAR WENT by and this woman called one day with two young girls to have their teeth examined, and an opinion expressed. They were



daughters of a genuine millionaire, in whose household the governess had found employment. The dentist expressed an opinion, which subsequently he discovered was opposed to that given by the regular family dentist. That governess persuaded her mistress that the younger man was "up-to-date," and that the older was "an old fossil." The mother called, and the young dentist recognized that opportunity was inviting him. He made a lifelong friend of that Millionairess. She is still his patient. So are her children. So are their husbands, and their children. Also other relatives and friends. Altogether my friend roughly estimates that this woman's friendship has been worth over twenty thousand dollars to him. The governess who brought her has long since passed beyond his ken. But had he increased that two dollars fee, it is possible that he never would have seen the Millionairess. By adhering to his first estimate, he established a reputation for uprightness in the mind of that governess. Likewise he left her in his debt. And she paid the debt.





# Memorial Service to George Edwin Hunt.

The dental profession of Indiana will have a memorial service in honor of the memory of Dr. George Edwin Hunt, to be held in the auditorium of the Masonic Temple, North and Illinois streets, Indianapolis, Ind., on the evening of November 21, 1914, at eight o'clock. The principal address will be by Dr. John N. Hurty.

The friends of Dr. Hunt are cordially invited to attend this service.

CARL D. LUCAS, Chairman of Committee.

# Dr. Ferdinand J. S. Gorgas.

Dr. Ferdinand J. S. Gorgas, A.B., A.M., D.D.S., M.D., an honorable fellow of the American Academy of Dental Science, died in Baltimore, Md., April 8th, 1914, in the eightieth (80th) year of his life. In his profession he was known and honored as one of the most notable men of his time, both as author and educator. He received the degrees of A.B. and A.M. from Dickerson College, and his dental degree in 1854 from Baltimore Dental College, where he taught as Dean and Professor from 1867 until 1882. He received his medical degree from the University of Maryland in 1863, and was Dean and Professor there from 1882 until 1911, where he held the chairs of Prosthetic Dentistry, Oral Surgery and Dental Medicine. He was editor of the American Journal of Dental Surgery, of Harris' Principals and Practice of Dentistry, and of Harris' Dental Dictionary. He was also author of a work on "Dental Medicine" and of "Questions and Answers for Dental Students." He was a member of the Maryland State Dental Association, and an honorary fellow of many societies. His burial was at Greenmount Cemetery,



Baltimore. Professor Gorgas was an enthusiastic teacher, ever eager to raise the ethical and educational standard of his profession. A wife and two sons survive him. These sons are Dr. L. D. Gorgas, of Chicago, Ill., and Dr. H. F. Gorgas, of Baltimore, Md.

Resolved: That in the death of Professor Gorgas the Academy has lost one of its most valued fellows, whose colleagues, recognizing his great educational power, gave to him the many important positions which he held with such marked ability in the institutions he so faithfully served.

Respectfully submitted,

ROBERT R. ANDREWS, FORREST G. EDDY, EDWARD C. BRIGGS,

Committee.

## Leslie Edwin Palmer, D.M.D.

Died August 13, 1914, in New York City, of appendicitis and adhesions of the intestines, Leslie Edwin Palmer, D.M.D., in his thirty-fourth year.

Dr. Palmer was born in Palmer, Mass., November 23, 1880. Was the son of J. E. Palmer and Clara I. Allen. His early education was received in the schools of Massachusetts, and he graduated in 1907 from Tufts Dental College.

Immediately upon graduation he associated himself with Dr. E. Wunche, of Berlin. He remained there two and one-half years, and returned to New York to become the associate of Dr. Henry W. Gillett. In that association he had rapidly built up a remunerative practice, and had developed a marked ability in practical Roentgenology.

Deceased is survived by his wife, née Jeannette E. Rommel, of Kingston, New York.



## national Society Meetings.

American Institute of Dental Teachers, Ann Arbor, Mich, January 28-30, 1915.

Secretary, Dr. J. F. Biddle, 517 Arch St., N. S., Pittsburgh, Pa.

PANAMA-PACIFIC DENTAL CONGRESS, San Francisco, Cal., 1915.

Secretary, Dr. Arthur M. Flood, 240 Stockton St., San Francisco, Cal.

## State Society Meetings.

OHIO STATE DENTAL SOCIETY, Columbus, O., December 1-3, 1914. Secretary, Dr. F. R. Chapman, 305 Schultz Bldg., Columbus, O.

# National Association of Dental Faculties.

The National Association of Dental Faculties will hold its meeting on the 26th and 27th of January, 1915, at Ann Arbor, Mich. Headquarters, The Allenel Hotel.

This meeting will precede the Teachers Association meeting which will be held from the 28th to the 30th. Besides the regular business there will be several papers of interest to educators read before the association.

The Executive Committee meets at nine o'clock Tuesday, the 26th. Regular session will open at ten.

CHARLES CHANNING ALLEN, Secretary.

B. HOLLY SMITH,

Chairman of Executive Committee, Kansas City, Mo.



# Forsyth Dental Infirmary for Children. Dedicatory Exercises.

The dedication of the Forsyth Dental Infirmary for Children will take place on November 24th. The management extends a cordial invitation to all members of the dental profession to be present. There will be many new and interesting features, relative to the dental equipment, and the undersigned feels sure that all who accept this invitation will be repaid for making the trip.

The visitors will also thus have an opportunity to see the enormousness of the undertaking and to comprehend something of the inner workings of the institution.

HAROLD DE W. CROSS, D.M.D., Director.

149 Tremont Street, Boston, Mass.

## Montana State Board of Dental Examiners.

The Montana State Board of Examiners will hold a session on the second Monday in January, 1915.

DR. G. A. CHEVIGNY, Secretary.

Butte, Montana.

## New Jersey Board of Dental Examiners.

The New Jersey State Board of Dental Examiners will hold their regular semi-annual business meeting and examination in the Assembly Chamber of the State House, Trenton, N. J., on December 7, 8 and 9, 1914.

License fee \$25. No interchange of license. Practical tests required: Gold filling in a proximal surface of a tooth, also a bridge consisting of three or more teeth, exclusive of abutments, and one Richmond Crown (gold metal), mounted and articulated.

Applications must be filed *complete* with the secretary at least ten days before the date of the examination.

Attention is called to the following requirement: All applicants for a license to practice dentistry in New Jersey "shall present to said Board a certificate from the Superintendent of Public Instruction showing that before entering a dental college, he or she had obtained an academic education consisting of four years' course of study in an approved public or priviate high school or the equivalent thereof."

In accordance with the above ordinance the secretary will issue application blanks to applicants only upon presentation of the required certificate from the Superintendent of Public Instruction, Trenton, N. J.

For further particulars apply to

ALPHONSO IRWIN, D.D.S., Secretary.

425 Cooper Street, Camden, N. J.

# Obio State Dental Society.

The forty-ninth annual session of the Ohio State Dental Society will be held in Memorial Hall, Columbus, December 1, 2 and 3, 1914.

Papers will be read by Dr. Wm. A. Giffen, of Detroit, on "Technic for Taking Impressions and Making Models for Constructing Artificial Dentures," giving demonstrations with moving pictures; Dr. H. W. McMillan, of Cincinnati, on "Diagnosis and Treatment of Trifacial Neuralgia"; Dr. W. W. Curtiss, of Greenfield, Ohio, on "Conservation vs. Radicalism"; Dr. J. R. Callahan, of Cincinnati, "A Lantern Lecture on the "Use of Rosin in Operative Dentistry."

A selected list of progressive clinics will be given on Wednesday forenoon and general clinics on Thursday forenoon.

One evening will be given to a Health Conservation Conference to be participated in by all professions and interests devoted to the furtherance of human health and welfare.

A cordial invitation is extended to all society members from other States.

F. R. CHAPMAN, Secretary.

305 Schultz Building, Columbus, Ohio.

## Iowa State Dental Society.

The Northwestern District of the Iowa State Dental Society will hold a clinic and manufacturers' exhibit at the Martin Hotel, Sioux City, Ia., November 30th, December 1st.

Nearly all of the leading manufacturers have signified their intention of having a representative present with a full line of exhibits.

The following men will appear on the program: Dr. T. B. Hartzell, Minneapolis, pyorrhea clinic and paper on "Secondary Infection"; Dr. W. H. MacNeil, Minneapolis, paper and clinic on "Conductive Anesthesia"; Dr. T. J. Kirby, Holton, Kansas, paper on "Dental Economics."

A banquet and special entertainment will be a special "feature."

C. E. Westwood, Secretary.

500 F. L. & T. Building, Sioux City, Ia.